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SIGNIFICANT PRE-ACCESSION FACTORS PREDICTING SUCCESS OR FAILURE DURING A MARINE CORPS OFFICER'S INITIAL SERVICE OBLIGATION

by

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13. ABSTRACT (maximum 200 words)

Increasing diversity and equal opportunity in the military is a congressional and executive priority. At the same time, improving recruiting practices is a priority of the commandant of the Marine Corps. In an effort to provide information to the Marine Corps that may improve recruiting practice and enable retention of a higher quality and more diverse officer corps, probit econometric models are estimated to identify significant factors an officer candidate possesses prior to accession in predicting the probability of career success, as determined by career designation, and the probability of career failure, as determined by separation under unfavorable conditions and receiving a legal action while commissioned. Results showed demographic characteristics, such as race and marital status, significantly predict career success and career failure. In addition, officers with reenrollment waivers for withdrawal or dismissal from OCS, USNA, and NROTC proved less likely to be selected for career designation and more likely to be separated under unfavorable conditions. Based on the findings, the Marine Corps should reevaluate whether to grant reenrollment waivers to officer candidates, should improve data collection, and strongly consider using non-cognitive assessment during the officer candidate screening process. The researcher also recommends ways to improve the models used in this study.

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SIGNIFICANT PRE-ACCESSION FACTORS PREDICTING SUCCESS OR FAILURE DURING A MARINE CORPS OFFICER'S INITIAL SERVICE OBLIGATION

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ABSTRACT

Increasing diversity and equal opportunity in the military is a congressional and executive priority. At the same time, improving recruiting practices is a priority of the commandant of the Marine Corps. In an effort to provide information to the Marine Corps that may improve recruiting practice and enable retention of a higher quality and more diverse officer corps, probit econometric models are estimated to identify significant factors an officer candidate possesses prior to accession in predicting the probability of career success, as determined by career designation, and the probability of career failure, as determined by separation under unfavorable conditions and receiving a legal action while commissioned. Results showed demographic characteristics, such as race and marital status, significantly predict career success and career failure. In addition, officers with reenrollment waivers for withdrawal or dismissal from OCS, USNA, and NROTC proved less likely to be selected for career designation and more likely to be separated under unfavorable conditions. Based on the findings, the Marine Corps should reevaluate whether to grant reenrollment waivers to officer candidates, should improve data collection, and strongly consider using non-cognitive assessment during the officer candidate screening process. The researcher also recommends ways to improve the models used in this study.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACT	American College Test
AFQT	Armed Forces Qualification Test
CD	career designation
CDF	cumulative distribution function
CNA	Center for Naval Analyses
DUI	driving under the influence
EAS	expiration of active service
EOS	expiration of obligated service
FY	fiscal year
FITREP	fitness report
FMCR	Fleet Marine Corps Reserve
GCM	General Courts Martial
GPA	grade point average
IOT	in order to
IPEDS	Integrated Postsecondary Education Data System
LDO	Limited Duty Officer
MARADMIN	Marine administrative message
MCD	Marine Corps District
MCO	Marine Corps Order
MCRC	Marine Corps Recruiting Command
MCRCO	Marine Corps Recruiting Command Order
MCRISS	Marine Corps Recruiting Information Support System
MCTFS	Marine Corps Total Force System
MLDC	Military Leadership Diversity Commission
MO	misconduct offense
MMO	major misconduct offense
MMOA-3	Manpower Management Officer Assignments
MMSB	Manpower Management Support Branch
MOS	military occupational specialty
NJP	non-judicial punishment

NROTC	Naval Reserve Officer Training Corps
OCC	Officer Candidate Class
OCS	Officer Candidates School
ONTO	other non-traffic offense
ORB	Officer Retention Board
OSO	Officer Selection Officer
PA	physical appearance
PFT	physical fitness test
PII	personally identifiable information
PLC	Platoon Leaders Class
PS	physical standard
PW-QCP	Propensity-weighted Qualified Candidate Population
QCP	Qualified Candidate Population
REEN	reenlistment
SAT	Scholastic Aptitude Test
SCM	Summary Courts Martial
SPCM	Special Courts Martial
TBS	The Basic School
TFDW	Total Force Data Warehouse
TO	traffic offense
TR	reenrollment
UCMJ	Uniform Code of Military Justice
USMC	United States Marine Corps
YCS	years commissioned service

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I. INTRODUCTION

In recent years, the United States government has focused on increasing diversity and equal opportunity in the federal workforce. Congress, through the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, mandated a Military Leadership Diversity Commission (MLDC) be created to "conduct a comprehensive evaluation and assessment of policies that provide opportunities for the promotion and advancement of minority members of the Armed Forces, including minority members who are senior officers." Similarly, the President of the United States issued Executive Order 13583 (2011) directing government agencies to focus more on diversity in their workforce. Still, the push for diversity in military leadership is complicated by minority representation at selection into, and advancement at, every level in the military officer ranks.

The congressionally mandated MLDC (2011) found that top military leaders are neither represented in the same proportion as the United States population nor the military forces they lead. The Commission provided four explanations for low racial, ethnic and female representation in senior military leaders: less representation at initial officer accessions, less representation in career fields that more commonly advance to flag and general officer ranks, slower rates of advancement, and finally lower retention of midlevel female servicemembers. The commission also acknowledged that the mix of races, ethnicities and gender at every level of leadership is primarily determined by the proportions at accessions. Unfortunately, the overall majority of citizens fail to meet eligibility requirements, such as those in "education, test scores, citizenship, health status, and past criminal history. Further, racial/ethnic minorities are less likely to meet eligibility requirements than are non-Hispanic whites" (Military Leadership Diversity Commission, 2011, p. xvi).

In addition to lack of eligibility among minority populations, recent policies on force reduction and the return of competitive officer retention have complicated advancement of diversity goals. After September 11, 2001, the Marine Corps grew significantly to meet operational demands in Afghanistan and Iraq. However, in the last

few years, the Marine Corps reduced its numbers significantly in response to defense budget cuts and the U.S. withdrawal from Afghanistan and Iraq. Between 2011 and 2017, the Marine Corps planned to reduce its personnel numbers from 202,000 to 174,000 (Feickert, 2014), but the 2016 defense budget allowed the Marine Corps to temporarily halt its drawdown and maintain its personnel numbers at 184,000. The new plan is to hold the total personnel strength of the Marine Corps at 182,000 at the end of 2017 (Perkins, 2015).

One tool the Marine Corps uses to control its force is the Officer Retention Board (ORB). The purpose of the ORB is to maintain the required officer inventory by selecting officers for retention or accession. The Marine Corps conducts an ORB twice a year and manages its officer inventory using several programs: Career Designation (CD), Extended Active Duty, Return to Active Duty, and Interservice Transfer. Among the programs, CD is the most significant in managing the officer population because it "is the primary program for selecting officers for retention on the Active Duty List" (Headquarters Marine Corps, 2014d, p.2). According to Marine Corps Order (MCO) 1001.65,

> CD is the process used to determine which company grade officers will be offered the opportunity for continued active service beyond their initial active service obligation. CD accomplishes the objectives of retaining the best qualified officers on active duty and maintaining the AC officer population in each year of commissioned service (YCS) at a level that supports the promotion timing and opportunity guidelines to the rank of major. (Headquarters Marine Corps, 2014d)

The selection rates on the ORB directly correlate to the reduction in forces. As seen in Table 1, the Marine Corps started reducing its numbers in 2011 and the selection rates also decreased. Correspondingly, the Fiscal Year (FY) 2014 ORB #2 and FY 2015 ORB#1 and #2 selection rates increased in response to the change in the drawdown policy.

Table 1. Approved Career Designation Selection Rates.

CD Board	Combat Arms	Combat Service Support	Aviation Support	Aviation	Law
FY10 ORB #1	85%	85%	85%	All Qualified	All Qualified
FY10 ORB #2	80%	80%	80%	All Qualified	All Qualified
FY11 ORB #1	65%	65%	65%	All Qualified	All Qualified
FY11 ORB #2	65%	65%	65%	All Qualified	All Qualified
FY12 ORB #1	60%	60%	60%	95%	85%
FY12 ORB #2	60%	60%	60%	95%	85%
FY13 ORB #1	55%	55%	55%	95%	85%
FY13 ORB #2	55%	55%	55%	95%	85%
FY14 ORB #1	55%	55%	55%	95%	85%
FY14 ORB #2	70%	70%	70%	95%	85%
FY15 ORB #1	80%	80%	80%	95%	85%
FY15 ORB #2	80%	80%	80%	95%	85%

Adapted from: Headquarters Marine Corps. (2010a, Mar. 10). Fiscal year 2010 (FY 10) career designation board number 1 results (MARADMIN 170/10). Washington, DC: Author; Headquarters Marine Corps. (2010b, Sep. 2). Fiscal year 2010 (FY 10) career designation board number 2 results (MARADMIN 497/10). Washington, DC: Author; Headquarters Marine Corps. (2011a, Feb. 17). Fiscal year 2011 (FY 11) career designation number 1 officer review board results (MARADMIN 113/11). Washington, DC: Author; Headquarters Marine Corps. (2011b, Aug. 18). Fiscal year 2011 (FY 11) career designation number 2 officer review board results (MARADMIN 468/11). Washington, DC: Author; Headquarters Marine Corps. (2012a, Feb. 16). Fiscal year 2012 (FY 12) career designation officer retention board number 1 results (MARADMIN 076/12). Washington, DC: Author; Headquarters Marine Corps. (2012b, Aug. 31). Fiscal year 2012 (FY 12) officer retention board number 2 results (MARADMIN 485/12). Washington, DC: Author; Headquarters Marine Corps. (2013a, Feb. 25). Fiscal year 2013 (FY 13) officer retention board number 1 results (MARADMIN 094/13). Washington, DC: Author; Headquarters Marine Corps. (2013b, Aug. 26). Fiscal year 2013 (FY 13) officer retention board number 2 results (MARADMIN 420/13). Washington, DC: Author; Headquarters Marine Corps. (2014a, Mar. 12). Fiscal year 2014 (FY 14) officer retention board number 1 results (MARADMIN 106/14). Washington, DC: Author; Headquarters Marine Corps. (2014b, Sep. 15). Fiscal year 2014 (FY 14) officer retention board number 2 results (MARADMIN 454/14). Washington, DC: Author; Headquarters Marine Corps. (2015a, Mar. 12). Fiscal year 2015 (FY 15) officer retention board number 1 results (MARADMIN 124/15). Washington, DC: Author; & Headquarters Marine Corps. (2015b, Oct. 30). Fiscal year 2015 (FY 15) officer retention board number 2 results (MARADMIN 550/15). Washington, DC: Author.

In light of the Marine Corps' policy of reducing forces while attempting to increase diversity and quality it is imperative to examine the underlying factors at accession that best predicts officer success or failure.

A. PURPOSE

The purpose of this study is to identify the pre-service selection attributes and demographic characteristics in a Marine Corps officer candidate that best predicts success during the officer's initial service obligation. Success is defined as selected for career designation, as that is what allows officers to continue active service. More specifically, the study seeks to answer the following questions:

- What attributes and demographic characteristics do applicants possess prior to accession in the Marine Corps that are significant in predicting officer selection for Career Designation in the Marine Corps?
- Alternatively, what attributes and demographic characteristics do applicants possess prior to accession in the Marine Corps that are significant in predicting failure in the Marine Corps, based on separation under unfavorable conditions and receiving a legal actions while commissioned?
- How well can the model be used to develop a weighted composite to determine the probability of an officer's success?

Since diversity in the Marine Corps is primarily based on the mix at accessions, and retention in the Marine Corps is primarily based on selection for career designation, identifying the pre-accession characteristics that are significant in career designation may enable Officer Selection Officers to better select officer candidates and improve retention of a higher quality more diverse officer corps.

B. SCOPE

The applicable sample for this thesis is Marine Corps officers who were commissioned during FY 2008 through FY 2011 as these officers are likely to have been eligible for career designation on the FY 2011 through FY 2014 ORB boards. These boards were selected due to the selection rates being 70 percent or less. The research is primarily quantitative. Using data from the Total Force Data Warehouse (TFDW), an

econometric model is developed to determine the effect of pre-accession characteristics in predicting selection for career designation or failure from separation or legal action.

C. ORGANIZATION

This thesis is organized in five chapters. Chapter I provides background information to enable a better understanding of the research, explains the purpose of the study, and outlines the questions to be answered. Chapter II describes the events in an officer's initial service obligation and provides a summary of research relevant to this study. Chapter III outlines the data collected for this research, elucidates the methods used to derive the final dataset as well as summary and descriptive statistics. Chapter IV introduces the econometric models used and the results of the study. Finally, chapter V summarizes the results and relates the finding to the research questions. It recognizes limitations and proposes recommendations for future research.

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II. LITERATURE REVIEW

A. MARINE CORPS OFFICERS INITIAL SERVICE OBLIGATION

During the first years of active service, all Marine officers follow the same fundamental path. They enter into service and incur a service obligation, complete initial officer training at Officer Candidate School (OCS) and The Basic School (TBS), subsequent Military Occupational Specialty (MOS) training, and report to their first duty station. In addition, during the initial service obligation, every eligible Marine officer is reviewed for CD.

1. Marine Corps Officer Accessions

Marine Corps Recruiting Command Order (MCRCO) 1100.2 establishes the criteria for officer procurement and accessions. It describes recruiting policies, application procedures, and officer programs and their requirements. The Marine Corps commissions officers through five primary sources: Platoon Leaders Class (PLC), Officer Candidate Class (OCC), United States Naval Academy (USNA), Naval Reserve Officer Training Corps (NROTC), and Enlisted-to-Officer programs. Applicants to any program must be a United States citizen and meet age, character, fitness, academic, aptitude, dependency, appearance, and medical requirements prior to appointment or commission.

Each commissioning source has its own board to determine selection as an officer candidate and attendance to OCS. Selection to the USNA is competitive with an extensive screening process conducted by the Academy. Then, a board of Marine Corps officers assigned to the USNA determines which midshipmen will be commissioned as Marine Corps officers. Similarly, the NROTC has a competitive selection process for both Navy and Marine-Option scholarships. A board of commissioned officers at the Marine Corps District (MCD) level selects qualified applicants for NROTC Marine-Option Scholarships. Meanwhile a board conducted at Marine Corps Recruiting Command (MCRC) headquarters screens and selects Enlisted-to-Officer program applicants for commissioning.

In contrast to these programs, which select either high school graduates for scholarship programs or enlisted Marines for commissioning, OCC and PLC applicants are recruited by an Officer Selection Officer (OSO) from the general college population of qualified applicants.[1] OCC and PLC applicants account for over 55 percent of the officer accessions in the Marine Corps (MCRC ON/E, 2012). OSOs are responsible for submitting the best-qualified applicants for officer programs, in the quantities required, and ensuring all selected candidates report to training and become commissioned in the Marine Corps. The OSO forwards completed applications to the appropriate board for approval and selection as an officer candidate. OCC boards are convened at the recruiting region level, while PLC boards may be convened at the recruiting district level. However, final approval of OCC and PLC remains with the region Commanding Generals (Marine Corps Recruiting Command, 2013). Appendix A provides more information on the MCRC structure and geographic distribution.

2. Officer Candidate Class

The OCC program is intended to recruit graduates and graduating seniors of accredited colleges, universities, and law schools. Applicants may enter into one of five OCC category programs: Ground, naval aviator, naval flight officer, law, and reserve. OCC candidates attend a 10-week OCS program after obtaining their degree requirement. Officer candidates in the program do not incur any obligation to the Marine Corps until they successfully complete OCS and accept a commission as an officer in the Marine Corps. Officers commissioned through OCC obtain a minimum service obligation based on the completed program. Ground officers and lawyers are obligated to serve a period of at least 3-and-one-half years active service. Helicopter pilots and naval flight officers are obligated to serve 6 years and fixed wing pilots are obligated to serve 8 years active service (Marine Officer Programs, n.d.). Upon graduation of OCS and at the recommendation of the Commanding Officer of OCS, OCC candidates are commissioned as second lieutenants in the United States Marine Corps (USMC) or USMC Reserve and assigned to TBS (Marine Corps Recruiting Command, 2013).

[1] It is possible for college students to participate in NROTC programs, but a scholarship after the student has begun coursework is less common.

3. Platoon Leaders Class

According to MCRCO 1100.2, PLC is an officer program open to all full-time students attending accredited colleges or universities. Similar to OCC, the PLC program is divided into four component programs: Ground, naval aviator, naval flight officer, and law. Eligible students may enroll in the PLC program during any academic year. Enrolled freshmen and sophomores attend two 6-week summer training sessions, Juniors Course and Seniors Course, at OCS. Students enrolled in their junior year and law students attend one combined 10-week training session. Officer candidates in the program do not incur any obligation to the Marine Corps until they successfully complete OCS, their academic requirements, and accept a commission as an officer in the Marine Corps. Officers commissioned through PLC obtain the same service obligation as OCC candidates. Upon graduation at their education institution, PLC candidates are commissioned as second lieutenants in the USMC or USMC Reserve and assigned to TBS (Marine Corps Recruiting Command, 2013).

4. Officer Candidate School

All Marine Officer Candidates with the exception of USNA graduates attend OCS. Attendees at OCS receive leadership, academic, and physical training and evaluation to prepare them for commissioned service. The OCS website (http://www.trngcmd.marines.mil/Units/Northeast/OfficerCandidatesSchool.aspx), notes the mission of OCS "is to educate and train officer candidates in Marine Corps knowledge and skills within a controlled, challenging, and chaotic environment IOT evaluate and screen individuals for the leadership, moral, mental, and physical qualities required for commissioning as a Marine Corps officer". Graduates of OCS are commissioned as second lieutenants in the Marine Corps and sent to TBS for training.

5. The Basic School

All newly commissioned second lieutenants, regardless of commissioning source, attend training at TBS. According to the TBS website (http://www.trngcmd.marines.mil/Units/Northeast/TheBasicSchool.aspx), its mission is to "train and educate newly commissioned or appointed officers in the high standards of professional knowledge,

esprit-de-corps, and leadership to prepare them for duty as company grade officers in the operating forces, with particular emphasis on the duties, responsibilities, and warfighting skills required of a rifle platoon commander". Students at TBS develop the necessary skills to lead Marines and are evaluated on military skills, academics, and leadership.

A student's performance at TBS is important as it contributes to MOS selection. In approximately the 14th training week, MOS assignments are distributed to the students based on preference and the needs of the Marine Corps. Students list in order from first to last their preference among the MOSs. Students are then ranked according to their overall average among the three evaluation areas. Guaranteed contracts, such as aviation and law, are removed from the list and then the list is divided into thirds. The available MOS vacancies are distributed among the thirds (Blanco et al., n.d).

6. Career Designation

CD is the fundamental program the Marine Corps uses to manage its officer population because it is designed to retain the best qualified Marine Corps officers from each year group commissioned.

Marine officers may be career designated through one of three programs. The first two are meritorious CD programs that account for a relatively small fraction of career designations. First, the TBS Meritorious Career Designation Program allows the Commanding General, Marine Corps Combat Development Command, to nominate the top five percent of each TBS Basic Officer Course Class for CD. Second, Commanding Generals Meritorious Career Designation Program allows the Commanding Generals of Marine Forces Command, Marine Forces Pacific, Marine Corps Installations Command, MCRC, Training and Education Command, and Marine Corps Logistics Command to nominate eligible Marine officers for CD who were not selected on the most recent ORB, based on a quota corresponding to a percentage of the total eligible population. Lastly, Marine officers reviewed on the ORB are selected through the General Career Designation Program.

Captains or First Lieutenants in the promotion zone for Captain with 540 days of observed fitness report (FITREP) time in their primary MOS are eligible for general CD

(Headquarters Marine Corps, 2014d). Eligible officers vie for selection against their peers in five competitive categories of MOSs: combat arms, combat service support, aviation ground, aviation and law (see Table 2).

Table 2. Career Designation Competitive MOS Categories.

Combat Arms	Combat Service Support	Aviation Support	Aviation	Law
0302 0802 1802 1803	0180 02XX 0402 0602 1302 3002 3404 4302 5803	6002 6602 7204 7208 7210 7220 7315	75XX	4402

Adapted from: Headquarters Marine Corps. (2015b, Oct. 30). Fiscal year 2015 (FY 15) officer retention board number 2 results (MARADMIN 550/15). Washington, DC: Author

Manpower Management Officer Assignments (MMOA-3) conducts the CD Board and selects officers in the percentages determined by the offices of Manpower Plans, Programs and Budget, and Officer Plans (Garza, 2014). After the convening of the board, a Marine administrative message (MARADMIN) announces the results and names of selected officers. According to MCO 1001.65, selected officers have 30 days from the date of the announcement to accept their selection. Officers who accept selection incur a two-year service obligation and their expiration of active service (EAS) date is changed to indefinite (Headquarters Marine Corps, 2014d). After that, officers wanting to leave active service are required to transition to the reserves, resign their commission, or retire (Headquarters Marine Corps, 2015c). Officers who are not selected are eligible for reconsideration on a subsequent board if their EAS allows sufficient time for the results to be published. However, officers who are not selected, decline selection, or fail to respond in the 30 day window will execute their EAS in accordance with their initial

service obligation. Also, officers not selected may opt to continue service in the reserve component. All active component officers during their initial service obligation are, at a minimum, provided one opportunity for CD prior to reaching their EAS (Headquarters Marine Corps, 2014d).

7. Separations

Marines not selected for CD who served honorably are separated from the Marine Corps at their EAS. There are also other means for a Marine Officer to be separated from the Marine Corps. MCO 1900.16, Separation and Retirement Manual establishes the procedures for separating Marines. Marines leave the Marine Corps under many circumstances either before or after fulfilling their service obligation. Separations before fulfilling service obligation include "administrative separation, both voluntary and involuntary; disciplinary action, disability; failure of selection for promotion; and resignation for cause in the case of certain officers" (Headquarters Marine Corps, 2015c, para 1001). Separations after fulfilling service obligation include "expiration of active service (EAS), expiration of obligated service (EOS), resignation, and transfer to the Retired List, Fleet Marine Corps Reserve (FMCR), or Retired Reserve" (Headquarters Marine Corps, 2015c, para 1001). Upon separation, a Marine is assigned a characterization of service based on the Marine's performance and quality. The service characterizations are "honorable, general (under honorable conditions), uncharacterized, and separation under other than honorable conditions" (Headquarters Marine Corps, 2015c, para 6210). Other than honorable discharges are often due to a punitive action that resulted from a legal infraction.

8. Legal Actions

All active service men and women are must adhere to the regulations established in the Uniform Code of Military Justice (UCMJ). The UCMJ website (http://www.ucmj.us/) states the UCMJ "is the foundation of military law in the United States". It establishes the provisions and procedures for trying military personnel to include jurisdiction, acting authority, punishable offenses, and types of punishments. The level of punishment and level of authority for trial is determined by the severity of the

offense. The UCMJ inaugurates four primary punitive actions listed here in order from least to most severe: non-judicial punishment (NJP), summary courts-martial (SCM), special courts-martial (SPCM), and general courts-martial (GCM). The UCMJ subchapter 03 lists the regulations for NJP, subchapters 04 through 09 establish the regulations for courts-martial, and subchapter 10 outlines punishable offenses that may be charged under the four punitive actions. In addition to the UCMJ, Legal administration in the Marine Corps is governed by the Manual for Courts-Martial United States, the Manual of the Judge Advocate General of the Navy, and the Marine Corps Manual for Legal Administration (Headquarters Marine Corps, 2014c).

B. SIMILAR STUDIES

MLDC highlighted that the mix of races, ethnicities, and gender at accession is an important factor in determining the composition of officers at all ranks. In turn, the focus of this study is to identify pre-accession characteristics that predict success as a Marine Corps officer in order to promote better recruiting practices for OSOs. As such, the following review summarizes studies on the eligible college population of candidates that examined the effect pre-accession factors have on success or studies that created a composite model to predict success. Additionally, all studies examined are related to this study by the use of econometric probability models and quantitative analysis.

1. Eligible College Population

Throughout the last 20 years, officer recruiting goals have been distributed based on the numbers and geographic location of qualified officer applicants. A 1993 Center for Naval Analyses (CNA) study by North and Smith developed a method for allocating minority recruiting goals to MCD and recommended changes to the geographic location of OSOs based on Qualified Candidate Population (QCP) (as cited in Sandstrom, 2011). In 1994, the newly formed MCRC implemented the CNA recommendations for four MCDs. (Sandstrom, 2011). The strategy was in effect until 2001, when the Marine Corps adopted a new method, by Jareb and Parker of CNA, for calculating QCP and allocating OSOs. Then Kelly (2005), another CNA study, updated the Marine Corps officer recruiting structure study from 2001. This followed the same methodology as the 2001

study but used more detailed data obtained at the educational institution level (as cited in Sandstrom, 2011).

Sandstrom (2011) continues the series of CNA studies. Sandstrom added a propensity to serve measure to the CNA QCP to create a Propensity-Weighted QCP (PW-QCP). He then analyzed current OSO practices to determine whether they produced minority officer accessions comparable to the PW-QCP estimates and MCD goals. Additionally, he estimated the probability of accession based on pre-accession characteristics.

Sandstrom obtained data from the Integrated Postsecondary Education Data System (IPEDS), Barron's Profiles of American Colleges 2008, and the Joint Advertising Market Research and Studies Minority Officer Study survey. IPEDS provided the population of male full-time students, the average test scores, and graduation rates by educational institution. The minority officer study survey provided the propensity to serve rate. The researcher combined the data from the two sources and created the PW-QCP.

In addition, Sandstrom turned to Marine Corps Recruiting Information Support System (MCRISS) and Marine Corps Total Force System (MCTFS) data from the TFDW to estimate the probability of accession using data from FY 2006 to 2010. Using probit regression models, he determined the effect demographics, recruiting, aptitude, and PW-QCP rates had on accession. Sandstrom found that as aptitude and academic performance increased the probability of accession increased. Alternatively, as unemployment rates decreased so did the probability of accession. He also found that when compared across MCDs, both black and Hispanics are more likely to enter service from the 6th MCD (Sandstrom, 2011).

2. Pre-accession Factors As a Predictor of Success

Bower (2015) studied the effect of pre-accession factors on the performance and retention of Hispanic enlistees. The study's motivation is the need for improving recruitment of Hispanic enlistees in the Navy because differences in pre-accession factors may explain the differences in attrition, promotion, and retention between Hispanics and

non-Hispanics. The author used FY 2001 to 2009 data from the Navy's Personalized Recruiting for Immediate and Delayed Enlistment system, merged with personnel data from the Defense Manpower Data Center. The combined dataset contained variables related to career performance, demographics, mental and moral background, promotions, retention, and separations. Using probit regression analysis, Bower found Hispanics are less likely to attrite during the first 45 months of active service than their counterparts. Hispanics are more likely to acquire dependents in their first three-years of active service, and having dependents is important in predicting retention past three years and quicker promotion rates. He also found civil waivers to contribute to first-term attrition, but alcohol and drug waivers increase retention and are associated with quicker promotion rates (Bowers, 2015).

Similar to Bowers, Salas (2015) studied the effect pre- and post-commissioning factors had on promotion and retention for Hispanic Marine Corps officers to improve retention and promotion of Hispanic Marine Corps officers. More specifically, Salas sought to determine whether pre-commissioning academic test scores, TBS performance, MOS assignment, career experience, and FITREP performance differed between Hispanics and non-Hispanics, and if so, how do the differences affect promotion and retention. Additionally, Salas aimed to identify the variables that affect FITREP performance and whether the variables differ between the two populations. Using probit regression analysis, he found retention of Hispanics after year six is 8.7 percent more likely than non-Hispanics. After year 10, retention rates for non-Hispanics are still higher but only higher by 6.3 percent. Salas found no statistical significance between ethnicity and promotion to O4 suggesting Hispanics and non-Hispanics are treated as equal on the promotion board. Salas also found a lower retention rate among graduates of top quality or private colleges and a higher retention rate among prior-enlisted Hispanics (Salas, 2015).

3. Composite Models

Hoffman (2008) developed a model that career counselors at Headquarters Marine Corps could use to provide career counseling to officers. The author sought to improve

the Marine Corps Performance Evaluation System by identifying the significant variables in predicting promotion to major, lieutenant colonel, and colonel in the USMC. The author wanted to identify the effect that combat service has on an officer's promotion since the beginning of the current Global War on Terror, the effect physical fitness has on promotions and the significance of FITREPS in predicting promotion. He used FY 2008 promotion board data from the TFDW and Manpower Management Support Branch (MMSB) to create three separate samples corresponding to the three ranks: major, lieutenant colonel, and colonel. The data contained demographic, performance and service related variables. Using probit regression analysis, the author identified statistically significant factors and determined the effect each variable had on selection to each of the grades. He found eight, nine, and ten significant variables for the major, lieutenant colonel and colonel promotion models, respectively. He makes a special note that combat tours were significant for lieutenant colonel and colonel promotion, physical fitness and FITREP relative values were significant for major and lieutenant colonel promotion. From the statistically significant variables, he produced an interactive promotion model, for each rank, to predict the probability of someone being promoted based on observable characteristics (Hoffman, 2008).

Similar to Hoffman (2008), Garza (2014) developed a model to improve officer career counseling. Garza modeled the probability of CD, instead of promotion to a rank, as a function of significant career performance and demographic characteristics. Specifically, the researcher wanted to determine whether prior-enlisted service, higher physical fitness scores, higher performance on FITREPs, and combat service increased the likelihood of CD. The researcher merged data from MMOA-3, TFDW, and MMSB for FY 2010 to 2013 to create one dataset containing demographic, performance and service related variables. Using probit regression, the researcher determined the effect each of the variables had on selection for CD, identified statistically significant variables and created an interactive selection counseling model similar to Hoffman's 2008 model. Garza found officers commissioned through enlisted to officer programs, NROTC, and OCC to have a higher likelihood for CD. The researcher also found that higher physical

fitness test (PFT) and FITREP scores, as well as more combat deployments, increased the likelihood of CD (Garza, 2014).

C. LITERATURE REVIEW SUMMARY

A Marine Corps officer's initial service is a complex process characterized by accession, service obligation, initial training, MOS assignment and training, initial MOS experience, and selection to stay on active duty. OCC and PLC candidates are recruited by OSOs from the general college population of qualified candidates. Officers in ground MOSs generally incur the same service obligation of 3-and-one-half years, and are screened for CD approximately in the same year. In contrast, aviation and law officers attend more training, education, and incur a greater service obligation than ground officers. The result is that these officers typically do not get screened for CD with their cohort year of commissioned officers. Additionally, both aviation officers and law officers are selected in a larger proportion than ground officers. For these reasons, this thesis focuses on OCC and PLC officers in ground MOSs.

Previous quantitative research aimed to improve recruiting practices, provide insight into retention and promotion to increase the quality of retained officers, and increase the diversity composition of those retained. This thesis aims to contribute to this knowledge base by identifying the pre-accession characteristics that significantly predict CD (or career promotion and success) as well as separation due to unbecoming conduct (or career failure). This thesis falls between Sandstrom's and Garza's study in terms of an officer's career timeline. Sandstrom identified the effect pre-accession characteristics had on accession. Garza identified the effect demographics and career performance had on CD. This study also relates to Sandstrom's study by using nearly identical independent variables, but differs by the dependent variables. Although this study focuses on the same dependent variable as Garza, it differs in that this study does not examine career performance and focuses on pre-accession characteristics, which was not studied by Garza. Additionally, this study examines a different sample of Marine Corps officers, those that were subject to a more competitive environment given the drawdown. Another notable difference is many past studies that looked at accession, promotion, and retention

did not specifically examine the effect the independent variables had on separations or misconduct in the active component. This thesis seeks not only to identify the effect pre-accession characteristics have on CD, but also to identify their effects on separations and misconduct in an effort to improve OSO selections.

III. DATA AND PRELIMINARY ANALYSIS

This chapter provides information on the data used for this research. It details the sample selection criteria, the creation of the dependent and independent variables for the subsequent empirical analysis, and ends with a table of descriptive statistics.

A. DATA

TFDW houses a number of information systems including the two used for this thesis, MCRISS and MCTFS. MCRISS provided officer applicant data and MCTFS provided post-accession data related to the Marine officer's career. Data in this research reflects Marine officers' data at the end of Fiscal Year (FY), September 30, from FY 2004 to 2014. TFDW sent nine separate files indicating an officer's civilian education, commissioning source, demographics, legal actions, officer application, officer career, separations, waivers, and test scores, among others. Prior to the files being transmitted, all personally identifiable information (PII) was removed and replaced by randomly-generated identifiers by TFDW. Using the unique identifier, the nine files were combined to create one master file of 27,123 officer-FY observations.

Each file contained many observations with the same identifier, as an officer's record was updated within the same FY. These duplicate observations needed to be removed. In addition, multiple records had missing variable values. The protocol was to keep a unique record per officer in each FY, with that record having the most non-missing and/or most updated values if that identifier was observed multiple times. This rule of thumb proved effective but did not replace all missing variable values. To capture the effect of missing variable values, separate binary variables were created to represent the missing data.

For example, the civilian education and demographic files were cleaned by deleting duplicates simply based on the unique identifier. However, the officer career file was cleaned by first keeping only the most recent sequence number, representing the most current data for each observation. Only then were the remaining duplicates removed using the identifier. With respect to the separations file, observations were deleted whose

separations date occurred prior to commissioning. Also, only the observation with the highest rank for each officer was kept. The remaining duplicates were examined individually and only the observation with the most significant separations description was retained. All nine files were cleaned to result in one row of data per officer observation.

B. SAMPLE SELECTION

The study sample includes officers who were commissioned in FY2008 to FY2011. These are the officers most likely to have been on the ORB for FY 2011 to FY2014. This assumption is based on Table 3. As shown in Table 3, there is an identifiable trend in the data. There is approximately a three-year difference between when a candidate is commissioned and is career designated. The yellow highlighted area in Table 3 likely indicates the officers selected under the general CD board, whereas the green highlighted area likely indicates the officers selected for CD from the TBS Meritorious CD Program. Also of note is the highlighted regions are in groups of two and likely represent the two ORB boards per year.

Table 3. Commissioning and Career Designation Year Comparison.

Commissioning Fiscal Year	Career Designation Year			
	2007	2008	2009	2010
2000	52	24	2	1
2001	107	62	4	9
2002	219	204	13	51
2003	434	308	12	103
2004	11	964	21	29
2005	8	456	738	19
2006	19	19	491	456
2007	0	63	7	601
2008	0	31	47	3
2009	0	0	35	42
2010	0	0	0	10

The data did not contain actual career designation dates beyond 2010. Thus, there is a limitation to this method in that the FY2011 ORB may have screened officers commissioned in FY2007 and the officers commissioned in FY2011 may have been screened on the FY2015 board. However, this study seeks to compare the effects accession characteristics had on selection for career designation among officers in the same commissioned year. To select the relevant sample for analysis, officers with a CD date less than or equal to 2010 were removed from the data. Then, officers with a commission date less than 2008 or greater than 2011 were dropped. The last step in narrowing the sample was to remove aviation, law, and limited duty officers (LDOs). As previously mentioned, aviation and law officers have longer training than other MOSs. The result is they are not screened for career designation with their commissioning year peers. In addition, they have different contracts than ground contract officers and are selected at higher percentages. For these reasons, only ground contract officers are included in the sample. LDOs were removed from the sample because they were previously warrant officers and were not commissioned through any of the officer accession sources used in this study. Aviation, law and LDOs were removed from the sample using MOS codes found in the officer career information file. The MOSs kept for this study corresponds to the ground MOS categories used by career designation boards found in Table 2. The method described proved to be effective in selecting the sample. As seen in Table 4, the selection rates in the sample are comparable to the ORB selection rates.

Table 4. Sample Selection Rates and Authorized Career Designation Selection Rates Comparison.

Commissioning Fiscal Year	Not Selected	Selected	Total	Selection Rate	ORB Selection Rate	ORB Year
2008	507	872	1,379	63%	65%	2011
2009	541	903	1,444	63%	60%	2012
2010	478	879	1,357	65%	55%	2013
2011	845	583	1,428	41%	55%	2014

C. VARIABLES

The analysis sample includes 5,650 officer-observations and 60 variables, three dependent variables and 57 potential independent variables. The independent variables are separated into five categories: academics, application, commissioning, demographics, and waivers. As mentioned earlier, the final dataset does not contain any PII. The following sections explain each variable in more detail.

1. Dependent Variables

There are three dependent variables in this study, selected for career designation, separated under unfavorable conditions, and legal action while commissioned. The selected for career designation variable was created using the career designation description variable in the officer career file. The variable is equal to 1 for selected for CD, 0 otherwise. Selected for CD is determined if the officer had a career designation description of "career designation," "final non-acceptance," or "list of selectees." The unfavorable separation variable is equal to 1 if someone was separated under unfavorable conditions, 0 otherwise. Unfavorable separation was created using the separations description variable in the separations file. Unfavorable separation is determined if the officer was separated for the following reasons: "alcohol rehabilitation failure," "conscientious objector," "court martial (other)," "failure to complete a course of instruction," "in lieu of trial by court martial," any misconduct offense, "non-retention on active duty," "personality disorder," "physical standards," "substandard performance," "unacceptable conduct" or "weight control failure." Lastly, the commissioned legal action variable was created using a commissioning date variable and legal action date. If the legal action date was after the commission date then the legal action assumed a value of 1, 0 otherwise. A legal action is characterized by whether an officer received any military punishment as described in the UCMJ: NJP, SCM, SPCM, and GCM. Table 5 is the list of dependent variables and summary statistics. For binary variables with a value of 1 or 0, the mean is the proportion of observations with a value of 1 for that variable.

Table 5. Summary Statistics of Dependent Variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
SEL_CAR_DES	5650	0.578	0.494	0	1
UNFAV_SEP	5650	0.016	0.126	0	1
COMM_LEG_ACT	5650	0.007	0.085	0	1

2. Academics

The academics category includes GPA, level of education and aptitude. GPA represents the last recorded GPA at application. Unfortunately, the dataset was incomplete and there were many missing variable values. To remedy this, GPA was derived from three variables in the application data file: contract GPA, cumulative GPA, and current GPA. However, the final GPA variable still had 902 missing values. As explained in the data cleaning section, xGPA is equal to 1 for the 902 missing values. The education level variables were created from the civilian education file. If the officer had an education greater than, equal to, or less than undergraduate level, more college, college, and less college variables were equal to 1 respectively. xCOLLEGE is equal to 1 for the 17 missing education values.

Officer applicants are required to possess one of three aptitude scores to be eligible for commissioning: Scholastic Aptitude Test (SAT), American College Testing (ACT), and the Armed Forces Qualification Test (AFQT) (Marine Corps Recruiting Command, 2013). As such, an aptitude variable was created using the last professed SAT and ACT score from the officer application file and the last AFQT score reported in the test score file. To compare like measures, each score was transformed into a standardized score (z-score) representing the number of standard deviations away from the national mean. The SAT z-score was created using the 2015 national mean and standard deviation for the composite math and critical reading sub-score reported in SAT Percentile Ranks for Males, Females, and Total Group 2015 College-Bound Seniors - Critical Reading + Mathematics (2015). The ACT z-score was created using the 2015 national mean and

standard deviation for ACT scores reported in the ACT profile report-national graduating class 2015 (2015).

As reported on the official Armed Services Vocational Aptitude Battery website (http://official-asvab.com/understand_coun.htm), the AFQT score is a percentage score based on how well the individual did as compared to the nationally-representative sample. As such, the AFQT z-score was created by taking the inverse of the cumulative standardized normal distribution. Similar to other variables, the binary variable xAPTITUDE equals 1 for the 2,177 missing aptitude values. Table 6 is the list of academics variables and summary statistics

Table 6. Summary Statistics of Academics Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Academics					
GPA	4748	3.073	0.491	1	4.5
xGPA	5650	0.160	0.366	0	1
MORE_COLL	5650	0.014	0.117	0	1
COLLEGE	5650	0.912	0.283	0	1
LESS_COLL	5650	0.071	0.256	0	1
xCOLLEGE	5650	0.003	0.055	0	1
APTITUDE	3473	0.974	0.552	-0.468	2.723
xAPTITUDE	5650	0.385	0.487	0	1

3. Application

Data from the application file has 12 variables representing physical fitness, referrals, legal actions prior to commissioning, and recruiting districts. The last-recorded PFT score in the officer application file was retained, and an indicator variable xPFT was created to equal 1 for the 1,410 missing PFT values. The referrals variable represents the number of referrals the applicant had at application. To indicate the MCD an officer was recruited from, seven MCD variables were created from the district variable in the officer application file. xMCD equals 1 for the 2,383 missing MCD values. Similar to the commissioned legal action variable, prior legal action was equal to 1 if the officer's legal

action occurred prior to commissioning. However, this time the prior legal actions per officer were summed to create a continuous variable with a range of 0 to 3 prior legal actions per officer. The final variable in application is xAPP_DATA and is equal to 1 for the 376 observations that did not have application data. Table 7 is the list of application variables and summary statistics

Table 7. Summary Statistics of Application Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Application					
PFT	4240	265.584	35.152	103	300
xPFT	5650	0.250	0.433	0	1
REFERRALS	5650	0.024	0.193	0	5
PR_LEG_ACT	5650	0.019	0.153	0	3
MCD12	5650	0.081	0.273	0	1
MCD1	5650	0.122	0.327	0	1
MCD4	5650	0.109	0.312	0	1
MCD6	5650	0.088	0.283	0	1
MCD8	5650	0.085	0.279	0	1
MCD9	5650	0.093	0.290	0	1
xMCD	5650	0.422	0.494	0	1
xAPP_DATA	5650	0.067	0.249	0	1

4. Commissioning

The commissioning data includes variables for accession sources and commissioning years. Three variables were used to create binary variables for the sources OCC, PLC, ENL_PGM, USNA, and NROTC. The variable is equal to 1 if the officer commissioned through that source and 0 otherwise. xENT_PGM represents 30 missing values for commissioning source. Even though this thesis is only interested in OCC and PLC applicants, the other entry programs are included because removing them would create omitted variable bias in the sample. The commissioning date variables were created using commission date in the officer application file and date accepted first commission, date of rank first commission and officer active duty base date from the

officer career file. COMM_2008 through COMM_2011 equal 1 if the officer was commissioned during that year, 0 otherwise. xCOMM_FY equals 1 for the 42 missing commissioning year values. Table 8 is the list of commissioning variables and summary statistics

Table 8. Summary Statistics of Commissioning Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Commissioning					
OCC	5650	0.283	0.451	0	1
PLC	5650	0.299	0.458	0	1
ENL_PGM	5650	0.128	0.334	0	1
USNA	5650	0.129	0.335	0	1
NROTC	5650	0.155	0.362	0	1
xENT_PGM	5650	0.005	0.073	0	1
COMM_2008	5650	0.244	0.430	0	1
COMM_2009	5650	0.256	0.436	0	1
COMM_2010	5650	0.240	0.427	0	1
COMM_2011	5650	0.253	0.435	0	1
xCOMM_FY	5650	0.007	0.086	0	1

5. Demographics

The dependents variable represents the number of dependents the officer had at the time of application and is obtained from the officer application file. The age variable represents the officer's age at commissioning. Age was calculated using the date of birth variable in the demographics file and the commissioning date variable already described. xAGE equals 1 for the missing age variable values. The prior enlisted variable PR_ENL equals 1 if the present grade code from the officer career file is "O1E," "O2E,""O3E" or ENL_PGM is equal to 1. The demographics file provided gender, marital status, race or ethnicity, and nationality variables. The Female variable is equal to 1 if the officer is female. The Married variable is equal to 1 if the officer was married at the time of application. White equals 1 if the officer classified his race as "White," black if the officer classified his race as "Black or African American," Hispanic if the officer

classified his ethnicity as “Hispanic” for any race category, other race if the officer classified his race as “American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander,” and unknown if the officer declined to respond. MCRCO 1100.2 (2013) describes the four citizenship classifications used for recruiting. The DERNAT variable equals 1 if the officer’s citizenship is “U.S. Citizen Derivative-Naturalization,” DERUS equals 1 if “U.S. Citizen Derivative Birth,” USBORN equals 1 if “U.S. Citizen by Birth,” USNAT equals 1 if “U.S. citizen by Naturalization,” and NOT_CITIZEN equals 1 if the citizenship was anything other than those listed. Table 9 is the list of demographics variables and summary statistics

Table 9. Summary Statistics of Demographics Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Demographics					
DEPENDENTS	5650	0.126	0.554	0	6
FEMALE	5650	0.086	0.281	0	1
MARRIED	5650	0.083	0.276	0	1
AGE	5643	23.886	2.781	19	38
xAGE	5650	0.001	0.035	0	1
PR_ENL	5650	0.167	0.373	0	1
WHITE	5650	0.789	0.408	0	1
BLACK	5650	0.042	0.200	0	1
HISPANIC	5650	0.073	0.260	0	1
UNK_RACE	5650	0.048	0.213	0	1
OTH_RACE	5650	0.049	0.215	0	1
NOT_CITIZEN	5650	0.005	0.070	0	1
DERNAT	5650	0.003	0.051	0	1
DERUS	5650	0.022	0.148	0	1
USBORN	5650	0.944	0.230	0	1
USNAT	5650	0.026	0.160	0	1

6. Waivers

MCRCO 1100.2 (2013) outlines waivers authorized for commissioning. The waiver categories in this study were derived from the order and are explained in more detail in Appendix B. The value for each variable is the sum of waivers in each category per officer. For example, if an officer possessed two major misconduct offenses (MMOs), the variable assumed a value of two for the officer. The remaining waiver types used for this study are driving under the influence (DUI), drug, misconduct offense (MO), other non-traffic offenses (ONTO), physical appearance (PA), physical standard (PS), reenlistment (REEN), reenrollment (TR), and traffic offense (TO). The PA waiver category indicates the candidate's number of waivers for tattoos, body markings, branding or any other similar body alteration. PS represents candidates' waivers for failing qualifications for height, weight, body fat or being not physically qualified. TR waivers represent candidates who reenrolled in an officer program after being dropped from a commissioning program. The rest are easily explained with Appendix B[2]. Table 10 is the list of waivers variables and summary statistics

Table 10. Summary Statistics of Waivers Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Waivers					
MMO_WAIVER	5650	0.003	0.056	0	1
MO_WAIVER	5650	0.015	0.123	0	1
ONTO_WAIVER	5650	0.060	0.240	0	2
DRUG_WAIVER	5650	0.174	0.379	0	1
DUI_WAIVER	5650	0.024	0.154	0	1
TO_WAIVER	5650	0.034	0.182	0	1
PS_WAIVER	5650	0.004	0.059	0	1
TR_WAIVER	5650	0.075	0.278	0	3
REEN_WAIVER	5650	0.004	0.064	0	1
PA_WAIVER	5650	0.196	0.407	0	2

[2] There are waivers for age, dependents, and test scores. However the effects of these waivers are likely explained by other variables in the study and therefore omitted.

D. DATA AND PRELIMINARY ANALYSIS SUMMARY

This chapter describes the data obtained from TFDW and how the sample for analysis was constructed. It explains the methods and logic used to transform the raw data from multiple files into a combined dataset for analysis. It also presents summary statistics for three dependent variables and 57 independent variables. Appendix C provides descriptive statistics for the independent variables. It also provides the difference between the means as an indicator of the independent variable effects on the dependent variables. For binary independent variables, a positive value represents a greater proportion of individuals selected for CD, separated under unfavorable conditions, or receiving a legal action while commissioned possessed the trait. It suggests possessing that trait has a positive influence on the outcome of the dependent variable. A positive difference for continuous variables indicates the mean value for individuals selected for CD, separated under unfavorable conditions, or receiving a legal action while commissioned is greater than the mean of those without. It suggests an increase in the value of the continuous independent variable has a positive influence on the outcome of the dependent variable. The opposite holds true for negative differences.

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IV. ANALYSIS AND RESULTS

The descriptive statistics in Appendix C are useful in identifying the relationship between a single independent (explanatory) variable and the dependent (outcome) variable but do not account for the joint and conditional effects of all explanatory variables. That is, the descriptive statistics do not account for the effect of one explanatory variable while holding the effects of the other explanatory variables constant. Considering the fact that humans are complex beings and possess a magnitude of traits that contribute to successes or failures, econometric models are used in an effort to estimate the combined effect the explanatory variables have on the probability outcome of selected for career designation, separated unfavorably, or receiving a legal action while commissioned.

A. PROBIT MODEL

Wooldridge (2013) defines multivariable regression models and how they can be formed into econometric models for use in empirical analysis. Multivariate regression models estimate the effects of explanatory variables on an outcome variable. The outcome variables in this study are binary. As such, a binary response model such as logit or probit is appropriate. The probit model differs from the logit model because it assumes a normal distribution of errors versus a standard logistic distribution of errors. In turn, this study uses the probit model because the normality assumption for the errors is more reasonable than the extreme value distribution of the logit for the outcomes in this study.

The power of the probit model lies in its ability to bound the response probability of the outcome variable between zero and one. The estimate is based on a normal cumulative distribution function (CDF) of the full set of explanatory variables,

$$\mathrm{P}(y = 1 \mid \mathrm{x}) = G(\beta_0 + \mathrm{x}\beta),$$

where P is the response probability, y is the outcome variable, x is the full set of explanatory variables, G is the normal CDF, xβ equals $\beta_1 x_1 + \ldots + \beta_k x_k$, β is the estimate coefficient, and x is an explanatory variable (Wooldridge, 2013).

Given the non-linear function estimated, the coefficient estimates do not correspond to the partial effects of the explanatory variables on the outcome, but rather the direction of the effect (positive or negative). For binary explanatory variables, the partial effect is the percent change in the outcome probability when the value changes from zero to one, holding all other variables constant. It is calculated by the difference between the cumulative response probability when the variable is equal to one and the cumulative response probability when the variable is equal to zero. The partial effect for discrete variables is similarly calculated

$$G[\beta_0 + \beta_1 x_1 + ... + \beta_j (x_j + 1)] - G(\beta_0 + \beta_1 x_1 + ... + \beta_j x_j),$$

where x_j is a binary variable equal to zero or a discrete variable (Wooldridge, 2013).

The partial effect of continuous explanatory variables is less easy to explain. As continuous variables approach their maximum and minimum values the magnitude of the effect on the outcome probability increases. As such, to find the partial effect it is necessary to calculate the partial derivative of the continuous variable,

$$\frac{\partial p(\mathrm{x})}{\partial x_k} = g(\beta_0 + \mathrm{x}\beta)\beta_k \ \textit{where}\ g(\mathrm{z}) \equiv \frac{dG}{dz}(z),$$

where x_k is a continuous variable and g is a probability density function of the CDF (Wooldridge, 2013).

The statistical software STATA is used to estimate these probit models. In particular, the “probit” command provided the model estimates. The “mfx” command provided the partial effects of the explanatory variable on the response probability. The partial effects estimate provided by the “mfx” command for binary and discrete variables reflect the percentage change in the probability estimate by one additional increase in the explanatory variable. The partial effects estimate provided by the “mfx” command for continuous variables is the average partial effect of all the coefficients. This measure is useful in calculations, but to get the true marginal effects of continuous variables at a specified point, the “margins” command is used.

B. ECONOMETRIC MODELS

The econometric models for the three outcomes variables were estimated using standard probit. As explained in chapter III, the 57 explanatory variables were separated into five categories. The econometric models with the five categories of explanatory variables are displayed in Figure 1.

Figure 1. Econometric Models.

$$\begin{aligned}
P(Sel_Car_Des = 1) &= G(\beta_0 + \beta_1 Academics + \beta_2 Application + \beta_3 Commissioning + \beta_4 Demographics \\
&\quad + \beta_5 Waivers) \\
P(Unfav_Sep = 1) &= G(\beta_0 + \beta_1 Academics + \beta_2 Application + \beta_3 Commissioning + \beta_4 Demographics \\
&\quad + \beta_5 Waivers) \\
P(Comm_Leg_Act = 1) &= G(\beta_0 + \beta_1 Academics + \beta_2 Application + \beta_3 Commissioning + \beta_4 Demographics \\
&\quad + \beta_5 Waivers)
\end{aligned}$$

All models used the same base officer (control) as a comparison for analysis. The control is an officer with the following description:

- White
- Male
- Unmarried
- No dependents
- Not prior enlisted
- College degree
- OCC commissioning source
- Recruited from MCD 12
- Born in the U.S.
- No waivers
- No prior legal actions.

Sensitivity analysis was performed to determine the best model, mix of explanatory variables, and test the effect of collinearity. A separate set of regressions were performed where all continuous explanatory variables were edited to be within their minimum and maximum allowable limits for someone trying to enter the Marine Corps as an officer. The results were not substantially different from the model estimates reported in Appendix D and below. However, the corrections of these possibly mis-keyed data tend to overestimate the effect of missing values. It also correctly predicted the outcome variables probability of success at a lower rate. Multiple sensitivity tests were also performed where separate regressions would remove a variable that may have caused collinearity with another variable. After each regression a percent correctly predicted measure was calculated. Including all variables produced the best estimates because even in the presence of collinearity, removing any variable resulted in fewer percent correctly predicted. The full regression outputs for all three models can be found in Appendix D. In addition to the regressions, a correlation matrix was estimated to identify any relationship or dependence among explanatory variables. A correlation becomes significant as the value approached one or negative one. A positive number shows a positive dependence which means as the value of one increases the other is likely to increase. A negative number suggests a negative dependence which means as the value of one increases the other is likely to decrease. For the purpose of this study, a variable was considered correlated if it had a value greater than 0.25 or less than -0.25.

1. Selected for Career Designation

The selected for career designation model produced 27 statistically significant variables. As discussed earlier, the explanatory variables effect on the outcome of selected for career designation are observed while holding all other variables constant. The results show an officer commissioned in 2011 is approximately 22 percent less likely to be selected than an officer commissioned in 2008. Also, an officer candidate from MCD1, MCD 4, and MCD 9 are more likely to be selected than a candidate from MCD12. Candidates commissioned through enlisted to officer programs, USNA, and NROTC are more likely to be selected than someone from OCC, whereas OCC candidates are more likely to be career designated than PLC candidates. Factors that may

explain the differences between commissioning sources include the experience gained from being prior enlisted and the military education gained from service academies and NROTC.

The demographic variables for black, other race, unknown race, and female all had a negative effect on selection as compared to white, male officers. However, married applicants are more likely to be selected than their single counterparts. As seen in the correlation matrix found in Appendix E, the age, dependents, enlisted to officer program, married and prior enlisted variables are positively correlated. The correlation may help explain the significance of being married and also explain why some of the other variables are not significant when all are included in the model. The only significant citizenship variable is DERNAT which suggests someone who is a U.S. Citizen by Derivative-Naturalization is more likely to be selected than someone who is U.S. born. Officer program referrals are significant at the five percent level for predicting selection. The numbers of referrals are likely an indicator of character, ability, and future performance because the person making the referral likely thought the candidate well suited to be an officer in the Marine Corps.

The model results also show a higher GPA increases the likelihood of career designation. What is surprising, however, is the model predicted a higher aptitude score decreased the probability of selection. The GPA estimate is consistent with, but the aptitude estimate is contrary to, Sandstrom's findings on the probability of accession. Sandstrom (2011) found both GPA and aptitude statistically significant with a positive effect on accession. In addition, GPA and aptitude are positively correlated which suggests a higher GPA would also result in a higher aptitude. One possible explanation for this outcome is the high volume of missing aptitude values among the officers in the data. Another is the degree of positive correlation between GPA and aptitude scores, so that holding GPA constant, higher aptitude scores actually fail to predict selection.

PFT score at commissioning is statistically significant. This is not surprising considering the emphasis the Marine Corps places on physical fitness. Furthermore, Garza (2014) found the last recorded PFT scores prior to the ORB to be a significant indicator of selection. What is notable is the physical fitness level at commissioning

appears to be an indicator of physical fitness during the officer's career through to selection for career designation.

The waiver category produced two statistically significant variables: training waivers and physical appearance waivers. The training waiver variable estimate suggests someone who previously failed to complete a commissioning program is less likely to be selected for career designation. Physical appearance waivers are estimated to have a positive effect on the probability of career designation. Although it did not meet the criteria for this study, there appears to be a slight positive correlation between those with tattoos and PFT scores which may help explain the positive effect of physical appearance waivers.

Overall, the largest effects on the probability of selection came from the variables representing missing data. Seven of the nine variables representing missing data are statistically significant and illustrate the need for more complete data in predicting selection.

The 27 statistically significant variables, coefficient estimates for the probit regression and partial effects, as well as the significance level, and associated standard errors are presented in Table 11. The partial effect estimates for binary variables, such as MCD1, can be interpreted as an officer commissioned from MCD1 is 7.73 percentage points more likely to be career designated than someone from MCD12. The partial effect for discrete variables, such as training waiver, can be interpreted as one additional training waiver results in a 5.55 percentage point decrease in the probability of career designation. The partial effect for continuous variables, such as PFT, can be interpreted as, on average, one additional point on the PFT results in a 0.12 percentage point increase in the probability of career designation.

Table 11. Selected for Career Designation Model Statistically Significant Variables.

Variable	Probit Results	Partial Effects (dy/dx)
GPA	0.1592***	0.0621***
	(0.0403)	(0.0157)
xGPA	0.7392***	0.2597***
	(0.1715)	(0.0514)
xCOLLEGE	-0.6194*	-0.2422*
	(0.3402)	(0.1252)
APTITUDE	-0.1021**	-0.0398**
	(0.0409)	(0.0159)
xAPTITUDE	-0.1437**	-0.0561**
	(0.0657)	(0.0257)
PFT	0.0032***	0.0012***
	(0.0008)	(0.0003)
xPFT	1.1593***	0.3904***
	(0.2029)	(0.0539)
REFERRALS	0.2333**	0.0909**
	(0.0957)	(0.0373)
MCD1	0.2024**	0.0773***
	(0.0793)	(0.0295)
MCD4	0.1976**	0.0754**
	(0.0805)	(0.0299)
MCD9	0.2498***	0.0945***
	(0.0837)	(0.0305)
xAPP_DATA	-0.2284*	-0.0903*
	(0.1250)	(0.0498)
PLC	-0.1730***	-0.0678***
	(0.0528)	(0.0208)
ENL_PGM	0.6749***	0.2379***
	(0.2430)	(0.0735)
USNA	0.5950**	0.2132**
	(0.2678)	(0.0847)
NROTC	0.3991*	0.1487*
	(0.2276)	(0.0797)
xENT_PGM	-1.3815***	-0.4650***
	(0.4185)	(0.0858)
COMM_2011	-0.5608***	-0.2202***
	(0.0584)	(0.0226)
FEMALE	-0.1475**	-0.0581**
	(0.0636)	(0.0253)
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

Table 11 cont'd. Selected for Career Designation Model Statistically Significant Variables.

Variable	Probit Results	Partial Effects (dy/dx)
MARRIED	0.2424*** (0.0832)	0.0917*** (0.0303)
xAGE	-1.2187** (0.6144)	-0.4277*** (0.1486)
BLACK	-0.3138*** (0.0892)	-0.1244*** (0.0354)
UNK_RACE	-0.2633*** (0.0883)	-0.1043*** (0.0351)
OTH_RACE	-0.2228*** (0.0846)	-0.0881*** (0.0337)
DERNAT	1.6246*** (0.5835)	0.3830*** (0.0437)
TR_WAIVER	-0.1424** (0.0643)	-0.0555** (0.0251)
PA_WAIVER	0.0935** (0.0459)	0.0365** (0.0179)
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

To answer the final research question, a goodness to fit measure was estimated based on percent correctly predicted. To construct this, the researcher generated an outcome variable that assumes a value of one if the predicted probability of selection is at least 0.5 and zero otherwise. As a result, there are four possible scenarios: the predicted probability is equal to one and the actual observed value is equal to one, the predicted probability is equal to zero and the actual observed value is equal to one, and vice versa. When both are zero or both are one, the prediction is correct (Wooldridge, 2013). For this study, a threshold value of both 0.5 and 0.75 were used to estimate success. The results of the estimates are presented in Table 12.

Each cell is read from top to bottom: frequency, row percentage, and column percentage. As seen in the table, at the 0.5 probability, 79.51 percent predicted selected were accurate and 46.08 percent predicted not selected were accurate. The probability of an accurate prediction in the model, based on a mutually exclusive joint probability, is

65.4 percent. At the 0.75 probability, the probability of an accurate prediction decreased slightly to 52.76 percent but appears to overestimate failure.

Table 12. Percent Correctly Predicted Estimates

	Predicted probability is at least 0.5			Predicted Probability is at least 0.75		
	Not Selected	**Selected**	**Total**	**Not Selected**	**Selected**	**Total**
Predicted Not Selected	1,099 62.16 46.08	669 37.84 20.49	1,768 100 31.29	2,197 46.96 92.12	2,481 53.04 75.99	4,678 100 82.8
Predicted Selected	1,286 33.13 53.92	2,596 66.87 79.51	3,882 100 68.71	188 19.34 7.88	784 80.66 24.01	972 100 17.2
Total	2,385 42.21 100	3,265 57.79 100	5,650 100 100	2,385 42.21 100	3,265 57.79 100	5,650 100 100
	Probability of accurate prediction = 65.4%			Probability of accurate prediction = 52.76%		

2. Separated Under Unfavorable Conditions

In this model, the variables for more college, missing college, referrals, missing commissioning source, not a U.S. citizen, U.S. Citizen by Derivative-Naturalization, major misconduct offense waiver, physical standards waiver, and reenlistment waiver are all omitted because they predict failure perfectly.

The separated under unfavorable conditions model produced eight statistically significant variables shown in Table 13. Unlike the selected for career designation model, the missing variables had little to no effect on the outcome probability. Only the missing application data variable is significant for the probit estimate but the partial effect of the variable is not significant. Amazingly, the variables for black, other race, unknown race, female, married, and training waivers all had the inverse effect on separated under unfavorable conditions compared to the selected for career designation model. The model estimates officers who are black, other race, unknown race, and female all have a higher probability of being separated under unfavorable conditions as compared to white, male

officers. Similarly, someone who previously failed to complete a commissioning program is more likely to be separated under unfavorable conditions. Alternatively, married applicants are less likely to be separated under unfavorable conditions than their single counterparts. As previously proposed, the effect of the married variable may be explained by its correlation with age, dependents, enlisted to officer programs, and prior enlisted.

Contrary to intuition, drug waivers are statistically significant at the one percent level and predict a decrease in the response probability with an increase of one drug waiver. Given the correlation matrix shows aptitude as measured by AFQT, SAT, ACT and GPA are positively correlated with PFT[3] and PFT is positively correlated with drug waivers, it is not surprising that drug waivers predict failure for being separated under unfavorable conditions.

Table 13. Separated Under Unfavorable Conditions Model Statistically Significant Variables.

Variable	Probit Results	Partial Effects (dy/dx)
xAPP_DATA	0.6402**	0.0342
	(0.3200)	(0.0277)
FEMALE	0.4194***	0.0176**
	(0.1253)	(0.0074)
MARRIED	-0.5261**	-0.0091***
	(0.2437)	(0.0025)
BLACK	0.4541***	0.0205*
	(0.1675)	(0.0112)
UNK_RACE	0.4459**	0.0199*
	(0.1848)	(0.0120)
OTH_RACE	0.4171**	0.0180*
	(0.1687)	(0.0104)
DRUG_WAIVER	-0.7255***	-0.0127***
	(0.2057)	(0.0022)
TR_WAIVER	0.2606**	0.0072**
	(0.1307)	(0.0037)
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

[3] PFT and GPA were significant predictors of selected for career designation.

3. Received a Legal Action While Commissioned

In this model, the variables for more college, missing college, referrals, missing commissioning source, missing a commissioning year, not a U.S. citizen, U.S. Citizen by Derivative-Naturalization, U.S. Citizen Derivative Birth , major misconduct offense waiver, traffic offense waiver, physical standards waiver, and reenlistment waiver are all omitted because they predict failure (i.e. not received a legal action) perfectly.

Overall, the results of this model are inconclusive. The model only produced two statistically significant variables (see Table 14), missing GPA and physical appearance waiver. The missing GPA variable is insignificant in the original probit model but the partial effects are statistically significant at the 10 percent level. The model estimated a 0.59 percent decrease in the response probability from having a missing GPA value. The physical appearance waiver variable is significant at the one percent significance for both the probit estimate and partial effect. The model estimated a 0.59 percent increase in the response probability from having one additional physical appearance waiver.

In addition, the research tests the hypothesis that legal actions prior to commissioning significantly predict legal actions while commissioned. However, the hypothesis was rejected by the data. Legal actions were defined by someone possessing a NJP, SCM, SPCM, or GCM. Thus, to possess a legal action prior to commissioning, the individual must have been prior enlisted. This relationship is evident in the correlation matrix. Legal actions prior to commissioning are positively correlated with prior enlisted. As previously discussed, age, dependents, enlisted to officer program, married and prior enlisted variables are positively correlated.[4] The relationship among these variables likely explains why legal actions prior to commissioning are neither significant nor predict legal actions while commissioned.

[4] Married and enlisted to officer programs were significant predictors of selected for career designation.

Table 14. Legal Action While Commissioned Model Statistically Significant Variables.

Variable	Probit Results	Partial Effects (dy/dx)
xGPA	-0.6188 (0.5591)	-0.0059* (0.0034)
PA_WAIVER	0.3921*** (0.1320)	0.0059*** (0.0020)
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

C. ANALYSIS AND RESULTS SUMMARY

The standard probit regression model was estimated to generate estimates for three econometric models that predict success or failures as an officer in the Marine Corps. Specifically, the dependent binary response variables are: selected for career designation, separated under unfavorable conditions, and legal action while commissioned. The probability estimates were derived by the cumulative effects of five explanatory variable categories: academics, application, commissioning, demographics, and waivers. Statistically significant variables were presented in Tables 11, 13, and 14, and the full model estimates are reported in Appendix D. A correlation matrix in Appendix E helps explain some of the major results and how these variables relate to each other. Chapter V will conclude the thesis by explaining how the findings answer the research questions, emphasize the limitations of the study, and provide recommendations for future research.

V. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this thesis was to identify pre-accession attributes and characteristics an officer candidate possesses prior to accession that significantly predict career success or failure in the Marine Corps. The research attempts to possibly improve officer recruiting and enable retention of a higher quality more diverse officer corps. To fulfill the purpose, multivariate econometric models were used to answer the three questions established in the introduction. The models produced 27 significant variables for predicting selected to career designation, eight for predicting separation under unfavorable conditions, and two for predicting legal action while commissioned.

The main findings indicate demographic differences are significant in predicting career designation and separated under unfavorable conditions. While there was little observed variation among white and Hispanic males, consistent with Salas (2015), the other races and female officers appeared to be represented less among those selected for career designation. The inverse was true for separation under unfavorable conditions. Those who were not male, white or Hispanic were more likely to be separated under unfavorable conditions. Someone who is married at commissioning is predicted more likely to be career designation than someone who was single while at the same time less likely for separation under unfavorable conditions. One explanation for this result is a majority of officers commissioned from enlisted to officer programs are married. Officers commissioned from enlisted to officer programs were estimated to be the most likely to be career designated. In addition, higher college GPA at commissioning increased the likelihood of career designation whereas an increase in an officer's aptitude, measured by ACT, AFQT, and SAT, decreased the likelihood of career designation. Similar to other research, PFT scores remained a significant predictor of success.

The majority of waivers had little significance to any model although the most noteworthy finding is the significance of training waivers on both career designation and separations. The training waivers were categorized as any individual who had a waiver for reenrollment in an officer program after being dropped from OCS, ROTC, or Service Academy. Training waivers were a significant predictor of selected for career designation

failure and separated under unfavorable conditions success. It is apparent in this case that past performance is positively correlated with future performance. The finding raises questions regarding the validity of issuing waivers for these incidences.

In response to the third research question, the selected for career designation model in this study does not appear to be suitable for creating a weighted composite as it only predicted the outcome at approximately 65 percent accuracy. However, it does seem possible to create a metric for predicting success with a more complete and improved model. The rest of this chapter addresses the limitations of this study and recommends future research including ways to develop a better model.

A. LIMITATIONS

There are many limitations to this study. To begin, the researcher had no control over data collection. The data was housed in pre-existing information systems. Its completeness is subject to the attention to detail of the personnel entering the information into the system. The product of poor data collection and entry was observed through the numerous missing variable values in the final dataset. Similar remarks were made by Sandstrom (2011) regarding MCRISS data. Sandstrom observed less than 30 percent of applicants had a self-reported aptitude score, and physical qualifications, character, and security clearance eligibility variables proved useless for analysis. In addition, the researcher had no control over retrieving the data from the system. The data was obtained from a secondary source, which removed all PII and replaced it with a randomly generated number. As a result, the accuracy of the data is questionable. Furthermore, the difficult nature of coordinating data retrieval hindered multiple retrievals of the data. In a study that is trying to capture the effects of variation to identify outcome probabilities, introducing unneeded variation seems inefficient in analysis of the outcomes of the study.

Arguably the most important limitation to the study is in the limited scope. Currently non-cognitive assessments are not conducted during the officer selection process and therefore there is no data available. Non-cognitive characteristics refer to traits such as mental resilience, attitude, integrity, interpersonal interaction, personality, motivation, and temperament (ACT Inc., 2014); the list is not all-inclusive. Similarly,

data related to the candidate's family history such as, number of parents in home, number of siblings, family income, and family history of service is not collected. All these variables may aid in explaining variation and predicting success as a Marine Corps officer. Moreover, this study neither analyzed how the state of residence affects the outcome like Salas and Sandstrom nor how unemployment rate affects the outcome as Sandstrom did. This study did identify the MCDs officer candidates are recruited from that significantly predict higher likelihood of success.

B. RECOMMENDATIONS

Based on the results from this study, the Marine Corps should reevaluate whether to administer reenrollment waivers for withdrawal or dismissal from any officer program. Given that military training and education is costly, it seems inefficient to provide waivers to individuals who have already demonstrated difficulty adjusting to the Military and who are less likely to succeed during their initial service obligation. The benefits of these waivers do not seem to be balanced by the cost.

In addition, the Marine Corps should strive to improve its methods of collecting data and maintaining MCRISS. More complete data would enable an improved model that captures greater variation and provides better predictions.

The Total Force Data Warehouse managers should allow Naval Postgraduate School students to gain access to the data warehouse conditional on meeting Naval Postgraduate School Institutional Review Board for the Protection of Human Subjects and Marine Corps protocol. Granting data warehouse access to the researchers would allow greater control over data and may improve research and the usefulness of its results.

Meanwhile, the Marine Corps should consider administering non-cognitive assessments during officer candidate screening and capturing that data in MCRISS. In addition, it should consider collecting data in MCRISS pertaining to the candidate's family history such as, number of parents in home, number of siblings, family income, and family history of service. This type of information will provide insight on the

individual's upbringing and may provide insight into the candidate's ability to complete and succeed during their initial service obligation.

A final recommendation is to improve the models estimated in this research. For example, the models could include variables such as unemployment rates and state of residence to capture local economic conditions. If and when they are recorded, measures of non-cognitive assessments and family demographics could also be included into the model, and thus improve the model's fit and percent accurately predicted.

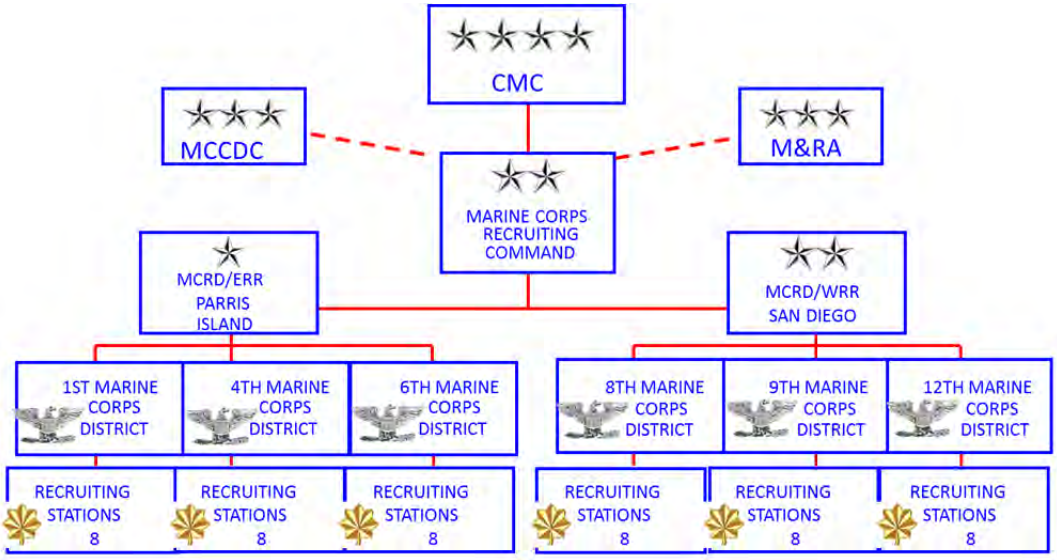
The 36th Commandant of the Marine Corps General Dunford in his 2015 planning guidance highlighted the need for improved recruiting.

> Our success in maintaining an elite force begins with recruiting young men and women who possess the character, mental aptitude, physical and psychological fitness, and desire required to earn the title "Marine." While our recruiters have met or exceeded all of our expectations in recent years, there is always room for improvement in our screening processes. We will enhance the assessment process for potential recruits and those undergoing initial training with psychological screening to augment our testing of physical and mental aptitude. We will quickly assess the efficacy of available psychological screening tools currently used by special operations forces, law enforcement organizations, and industry. We will subsequently use the best available tools to better predict the resiliency of recruits and their probability of successfully completing an enlistment. The end state is to enhance the quality and resilience of the force – thereby making us more combat ready.
>
> — General Joseph Dunford,
> 36th Commandant of the Marine Corps.

In this passage he directed the Marine Corps use modern assessment methods and prediction tools when screening and selecting recruits. If the Marine Corps implements the recommended changes, and the models in this research are improved with the new and updated data, the result may fulfill the guidance provided by the Commandant during selection of officers.

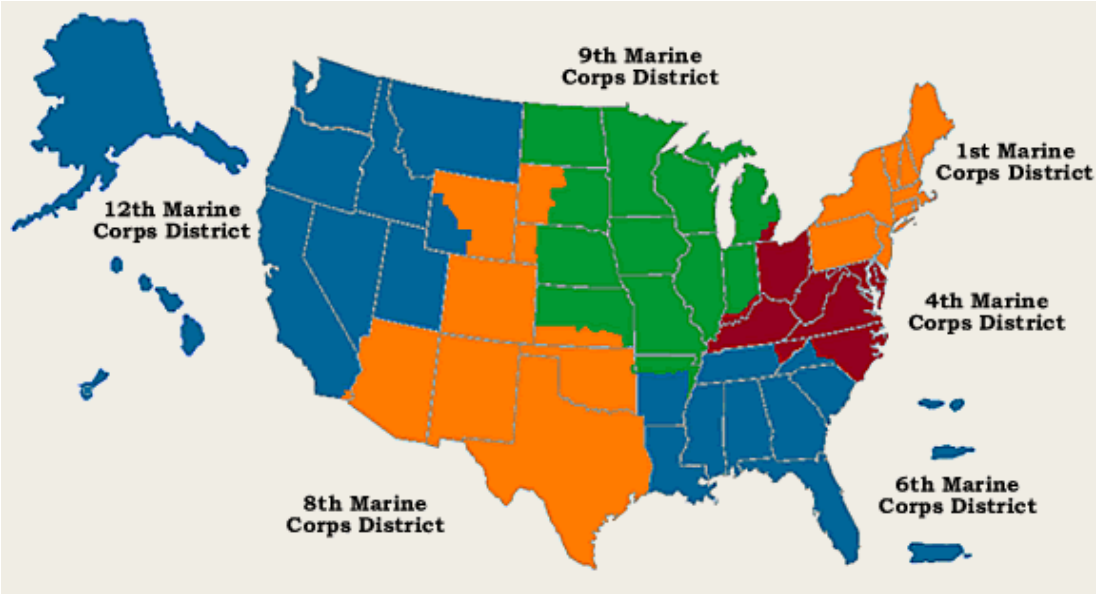
APPENDIX A. MARINE CORPS RECRUITING COMMAND

Figure 2. Marine Corps Recruiting Command Structure.



Adapted from MCRC ON/E. (2012). Overview Brief [PowerPoint presentation]. Retrieved from http://www.mcrc.marines.mil/Portals/95/OP%20Documents/Aug%2027%20Files/ON-E%20Overview%20Brief.pptx

Figure 3. Marine Corps District Geographic Depiction.



Source: Marine Corps Recruit. Retrieved from http://marinecorpsrecruit.com/usmc-recruiter/usmc-recruiting-districts-map/

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APPENDIX B. WAIVERS

Table 15. Officer Waiver Matrix.

Category	Type	Description
Traffic Offenses (TO)	Five to nine	Five to nine violations or one offense whose fine totals less than $250, or total fines of all offenses totaling more than $500. Cannot be alcohol related.
	Ten or more	10 or more violations or one offense whose fine totals more than $250, or total fines of all offenses totaling more than $500. Cannot be alcohol related.
Other Non-traffic Offenses (ONTO)	One or two	Convicted of, plead guilty to, plead no-contest to or plead nolo contendere to one or two civilian offenses that are not traffic related and are classified as less than a misconduct offense
	Three or four	
	Five or six	
	Seven or more	
Tattoos, Body Markings, Branding etc.	Non-visible (In standard PT shorts and shirt)	One tattoo is determined by being covered by five inch diam. Disc. No limitation to number of body markings. Must not be sexist (Nudity), racist, eccentric, vulgar, anti-American, offensive in nature, or express association with conduct or substances that violate the Marine Corps Drug Policy
	Visible (In standard PT Shorts and Shirt) Entire tattoo is visible but can be covered by the hand.	Limited to four visible body markings. Markings on head, neck, hands, wrists (within two inches of palm), or inside the mouth are prohibited. 1/2 or 1/4 sleeve tattoos are prohibited. Tattoos on feet or legs cannot be visible or apparent when wearing service "A," Dress Blue "A/B." Blue-White "A/B" or Evening Dress Uniform
	Visible (In standard PT Shorts and Shirt) Entire tattoo is visible but cannot be covered by the hand.	
	Ornamentation	Any body piercings, body sculpturing, or altering of the flesh for artistic, ritualistic or religious means. Regardless of location. Defined as piercing, mutilation (tongue splitting), ear lobe holes (gauges must be healed and closed prior to qualification (large enough for light to pass through), ornamental implantations (Face silicone implants, horns, etc.)

Category	Type	Description
Drugs	One to five times Marijuana Use	Self-admitted use. Any conviction for possession of any amount should be treated as a misconduct offense in addition to the drug use waiver
	Six or more times Marijuana use	
	Any drug use other than described above	
Misconduct Offense (MO)	One	Convicted of, plead guilty to, plead no-contest to or plead nolo contendere to any civilian misdemeanor offense that is not traffic related (Foreign or Domestic). Offense listed under common misconduct offense. Not a felony.
	Two or three	
	four or more	
DUI or DWI	One	Convicted of or plead no-contest to one DUI in which more than one year has passed between the offense and the contract date.
	Two or more DUI/DWI or any DWI/DUI less than 12 months ago	Convicted of, plead guilty to, plead no-contest to or plead nolo contendere to two or more DUIs or less than one year has passed since the offense. Must not be a felony.
Major Misconduct offenses (MMO)	Any Felony Convictions, juvenile or adult	Convicted of, plead guilty to, plead no-contest to or plead nolo contendere to any juvenile or adult felony offense.
Age	Ground	Ground: Age > 28 but < 30 at date of commissioning (Enlisted to Officer can commission at 30 without waiver).
	Air	Air: 27 1/2 years or greater, but less than 29 years at date of commissioning.
	Law	Law: Age > 28 but < 33 at date of commissioning.
	Age	Age greater than those listed above.
Dependents	Married w/one dependent child	Married with one dependent child under the age of 18, or when applicant doesn't have custody of dependents.
	married w/ more than one dependent child	Married with more than one dependent child under the age of 18.
	single parent w/any dependent children	Single parent with custody of any dependent children.
Test Score	ASVAB/ SAT/ ACT	AFQT less than 74, SAT less than 1000, ACT less than 22 Composite.
	ASTB	ASTB, one point in only one of the two sections.

Category	Type	Description
	LSAT	LSAT less than 150.
OCS Drop (Reenrollment)	OCS NPQ	NPQ at USMC OCS.
	OCS DROP	Was accepted for any service OCS but did not complete. Either from failure to ship, failure to graduate, or failure to complete the terms of their contract.
	OCS DROP (Non-rec to return by CO OCS)	Dropped from OCS and not recommended to return by the CO OCS, or failed 3 or more commissioning sources.
	Did not accept commission	Fully trained candidate who did not accept their commission when it was offered.
ROTC Drop (Reenrollment)	One ROTC Drop	Withdrawal or dismissal from any service ROTC program to which they had a contractual obligation.
	Dropped more than once from ROTC program	Withdrawal or dismissal from any service ROTC program to which they had a contractual obligation on more than one occasion.
Service Academy (Reenrollment)	Service Academy drop	Withdrawal or dismissal from any service academy regardless of the amount of time spent at academy.
RE Code	Reenlistment code other than RE-1A	Any code other than a RE-1A or another service's equivalent.
HT/ WT/ Body Fat Standards	HT/ WT/ Body fat	HT/WT body fat not within current USMC standards.
NPQ	Not Physically Qualified	BUMED Finds NPQ and does not recommend a waiver for the disqualifying condition.

Adapted from Marine Corps Recruiting Command. (2013, Feb. 26) Marine Corps Recruiting Command Officer Commissioning Manual (Marine Corps Recruiting Command Order 1100.2). Quantico, VA: Author.

Table 16. List of Typical Offenses.

Offense Code	Traffic Offenses (TO)
100	Bicycle ordinance violation.
101	Blocking or retarding traffic.
102	Contempt of court for minor traffic offenses.
103	Crossing yellow line, driving left of center.
104	Disobeying traffic lights, signs, or signals.

Offense Code	Traffic Offenses (TO)
105	Driving on shoulder.
106	Driving uninsured vehicle.
107	Driving with blocked vision/tinted window.
108	Driving with expired plates or without plates.
109	Driving with suspended or revoked license
110	Driving without license
111	Driving without registration or with improper registration.
112	Driving wrong way on one-way street.
113	Failure to appear for traffic violations.
114	Failure to comply with officer's directive
115	Failure to have vehicle under control.
116	Failure to signal.
117	Failure to stop or yield to pedestrian.
118	Failure to submit report after accident.
119	Failure to yield right-of-way.
120	Faulty equipment, such as defective exhaust, horn, lights, mirror, muffler, signal device, steering device, tail pipe, or windshield wipers.
121	Following too closely.
122	Hitchhiking.
123	Improper backing, such as backing into intersection or highway, backing on expressway, or backing over crosswalk.
124	Improper blowing of horn.
125	Improper passing, such as passing on right, passing in no-passing zone, passing stopped school bus, or passing a pedestrian in crosswalk.
126	Improper turn.
127	Invalid or unofficial inspection sticker, failure to display inspection sticker.
128	Jaywalking.
129	Leaving key in ignition.
130	Leaving the scene of accident (when not considered hit and run)
131	License plates improperly displayed or not displayed.
132	Operating overloaded vehicle.
133	Racing, dragging, or contest for speed.
134	Reckless, careless or imprudent driving (considered a traffic offense when the fine is less than $300 and there is no confinement). Court costs are not part of a fine.
135	Reserved for future use
136	Seat belt/child restraint violation.
137	Skateboard/roller skate violations.

Offense Code	Traffic Offenses (TO)
138	Speeding.
139	Spilling load on highway.
140	Spinning wheels, improper start, zigzagging, or weaving in traffic.
141	Violation of noise control ordinance.
142	Other Traffic Offenses not specifically listed
143	Reserved for future use
144	Reserved for future use
1 to 4 offenses, no waiver required; 5 to 9 offenses requires Recruiting Station Commanding Officer (RS CO) waiver approval; greater than 10 offenses requires Marine Corps District Commanding Officer (MCD CO) waiver approval	

Offense Code	Other Non-Traffic Offenses (ONTO)
200	Altered driver's license or identification.
201	Assault (simple assault with fine or restitution of $500 or less and no confinement).
202	Carrying concealed weapon (other than firearm); possession of brass knuckles.
203	Check, worthless, making or uttering, with intent to defraud or deceive (less than $500).
204	Committing a nuisance.
205	Conspiring to commit misdemeanor.
206	Curfew violation.
207	Damaging road signs.
208	Discharging firearm through carelessness or within municipal limits.
209	Disobeying summons, failure to appear other than traffic.
210	Disorderly conduct; creating disturbance; boisterous conduct.
211	Disturbing the peace.
212	Drinking alcoholic beverages on public transportation.
213	Drunk in public.
214	Dumping refuse near highway.
215	Failure to appear, contempt of court. (all offenses except felony proceedings)
216	Failure to appear, contempt of court. (felony proceedings)
217	Failure to stop and render aid after accident.
218	Fare / Toll evasion.
219	Harassment, menacing or stalking.
220	Illegal betting/gambling; operating illegal handbook, raffle, lottery, or punchboard; cockfighting.
221	Indecent exposure.

Offense Code	Other Non-Traffic Offenses (ONTO)
222	Indecent, insulting, or obscene language communicated directly or by telephone to another person.
223	Jumping turnstile (to include those States that adjudicate jumping a turnstile as petty larceny).
224	Juvenile adjudications, such as beyond parental control, incorrigible, runaway, truant, or wayward.
225	Killing a domestic animal.
226	Littering.
227	Loitering.
228	Malicious mischief (Fine or restitution of $500 or less and no confinement).
229	Pandering
230	Poaching.
231	Purchase, possession, or consumption of alcohol beverages or tobacco products by minor.
232	Removing property from public grounds.
233	Removing property under lien.
234	Robbing an orchard.
235	Shooting from highway.
236	Throwing glass or other material in roadway.
237	Trespass (non-criminal/simple).
238	Unlawful assembly.
239	Unlawful manufacture, sale, possession, or consumption of liquor in public place.
240	Unlawful use of long-distance telephone calling card.
241	Using or wearing unlawful emblem/identification.
242	Vagrancy.
243	Vandalism (Fine or restitution of $500 or less and no confinement).
244	Violation of fireworks law.
245	Violation of fish and game laws.
246	Violation of leash laws.
247	Violation of probation.
248	Other Non-Traffic Offenses specifically not listed
1 to 4 offenses requires Recruiting Station Commanding Officer (RS CO) waiver approval; 5 to 9 offenses requires Marine Corps District Commanding Officer (MCD CO) waiver approval; greater than 10 offenses, ineligible for enlistment (exception to policy)	

Offense Code	Misconduct Offenses (MO)
300	Aggravated assault, fighting or battery (more than $500 fine or restitution or confinement).
301	Carrying of weapon on school grounds. (non-firearm)
302	Concealment or failure to report a felony
303	Contributing to delinquency of minor.
304	Crimes against the family (non-payment of court ordered of child support/alimony).
305	Criminal mischief (more than $500 fine or restitution or confinement).
306	Criminal trespass.
307	Desecration of grave.
308	Domestic battery/violence, not considered Lautenberg Amendment.
309	Driving while drugged or intoxicated, or driving while ability impaired, permitting a DUI.
310	Illegal or fraudulent use of a credit card, bank card (value less than $500).
311	Larceny or conversion (value of less than $500).
312	Leaving scene of an accident or hit and run.
313	Looting.
314	Mailbox destruction.
315	Mailing, to include e-mail, of obscene or indecent matter.
316	Possession of marijuana or drug paraphernalia (30 grams or less) CO MCD level waiver
317	Prostitution or solicitation for prostitution.
318	Reckless driving, careless, or imprudent (considered a misdemeanor when the fine is $300 or more or when confinement is imposed; otherwise, considered a minor traffic offense).
319	Reckless endangerment.
320	Resisting arrest or eluding police.
321	Selling or leasing weapons.
322	Stolen property, knowingly received (value less than $500).
323	Throwing rocks on a highway, throwing missiles at sporting events, throwing objects at vehicles)
324	Unauthorized use/taking of a vehicle/conveyance from family member, joy riding.
325	Unlawful carrying of firearms or carrying concealed firearm.
326	Unlawful entry.
327	Use of telephone, internet, or other electronic means to abuse, annoy, harass, threaten, or torment another.
328	Vandalism (more than $500 fine or restitution or confinement).
329	Willfully discharging firearm so as to endanger life; shooting in public.

Offense Code	Misconduct Offenses (MO)
330	Other Misdemeanor Offenses not specifically listed
331	Reserved for future use
1 offense requires Marine Corps District Commanding Officer (MCD CO) waiver approval; 2 to 3 offenses requires Region Commanding General (CG, Region) waiver approval; greater than 4 offenses requires Commanding General, Marine Corps Recruiting Command (CG, MCRC) waiver approval	

Offense Code	Major Misconduct Offenses (MMO)
400	Aggravated assault, assault with dangerous weapon, maiming.
401	Arson.
402	Attempt to commit a felony.
403	Breaking and entering with intent to commit a felony.
404	Bribery.
405	Burglary.
406	Carjacking.
407	Carnal knowledge of a child.
408	Carrying of weapon on school grounds. (firearm)
409	Check, worthless, making or uttering, with intent to defraud or deceive (over $500).
410	Child abuse.
411	Child Pornography.
412	Conspiring to commit a felony.
413	Criminal libel.
414	Domestic battery/violence, as defined under the Lautenberg Amendment. (no waivers)
415	Embezzlement
416	Extortion.
417	Forgery; knowingly uttering or passing forged instrument. (Except for altered identification cards).
418	Grand larceny/Larceny (value of $500 or more).
419	Grand theft auto
420	Hate Crimes.
421	Illegal/fraudulent use of a credit card, bank card, or automated card (value $500 or more)
422	Indecent acts or liberties with a child, molestation.
423	Indecent assault.
424	Kidnapping or abduction.

Offense Code	Major Misconduct Offenses (MMO)
425	Mail matter; abstracting, destroying, obstructing, opening, secreting, stealing, or taking (not including the destruction of mailboxes).
426	Manslaughter.
427	Murder
428	Narcotics or habit-forming drugs; wrongful possession or use (marijuana not included).
429	Negligent/vehicular homicide.
430	Perjury or subornation of perjury.
431	Possession or intent to use materials in a manner to make a bomb or explosive device to cause bodily harm or destruction of property.
432	Public record; altering, concealing, destroying, mutilating, obligation, or removing.
433	Rape, sexual abuse, sexual assault, criminal sexual abuse, incest, or other sex crimes.
434	Riot.
435	Robbery, to include armed.
436	Sale, distribution, or trafficking (including "intent to") of cannabis (marijuana), or any other controlled substance.
437	Sodomy.
438	Stolen property, knowingly received (value $500 or more).
439	Terrorist threats including bomb threats
440	Violation of civil rights
441	Other Felony Offenses not specifically listed
442	Reserved for future use
Major Misconduct Offense (MMO): Any offense classified as a felony under state or local jurisdiction, will be counted as a MMO for waiver purposes regardless of similar charges listed on other tables. For all offenses, if unable to find a similar charge, the following applies: In doubtful cases, treat the offense as a MMO if the maximum confinement under state or local law exceeds one (1) year.	

Adapted from Marine Corps Recruiting Command. (2013, Feb. 26) Marine Corps Recruiting Command Officer Commissioning Manual (Marine Corps Recruiting Command Order 1100.2). Quantico, VA: Author.

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APPENDIX C. DESCRIPTIVE STATISTICS

Table 17. Descriptive Statistics for Officers Selected and Not Selected for Career Designation.

	Not Selected		Selected		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
Academics					
GPA	3.035	0.487	3.102	0.493	0.067
xGPA	0.135	0.342	0.177	0.382	0.042
MORE_COLL	0.014	0.117	0.014	0.118	0.000
COLLEGE	0.891	0.312	0.928	0.258	0.037
LESS_COLL	0.090	0.286	0.056	0.231	-0.034
xCOLLEGE	0.005	0.074	0.001	0.035	-0.004
APTITUDE	0.984	0.573	0.967	0.535	-0.017
xAPTITUDE	0.381	0.486	0.388	0.487	0.007
Application					
PFT	263.059	37.232	267.869	33.001	4.810
xPFT	0.156	0.363	0.318	0.466	0.162
REFERRALS	0.021	0.166	0.027	0.210	0.006
PR_LEG_ACT	0.014	0.130	0.022	0.168	0.008
MCD12	0.103	0.304	0.066	0.248	-0.037
MCD1	0.133	0.340	0.113	0.317	-0.020
MCD4	0.120	0.325	0.101	0.302	-0.019
MCD6	0.109	0.312	0.072	0.259	-0.037
MCD8	0.098	0.297	0.075	0.264	-0.023
MCD9	0.096	0.295	0.090	0.287	-0.006
xMCD	0.340	0.474	0.481	0.500	0.141
xAPP_DATA	0.046	0.210	0.081	0.274	0.035
Commissioning					
OCC	0.300	0.458	0.271	0.445	-0.029
PLC	0.367	0.482	0.250	0.433	-0.117
ENL_PGM	0.075	0.263	0.168	0.374	0.093
USNA	0.101	0.301	0.149	0.357	0.048
NROTC	0.147	0.354	0.160	0.367	0.013
xENT_PGM	0.011	0.104	0.001	0.035	-0.010
COMM_2008	0.213	0.409	0.267	0.442	0.054
COMM_2009	0.227	0.419	0.277	0.447	0.050
COMM_2010	0.200	0.400	0.269	0.444	0.069

	Not Selected		Selected		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
COMM_2011	0.354	0.478	0.179	0.383	-0.175
xCOMM_FY	0.006	0.076	0.009	0.092	0.003
Demographics					
DEPENDENTS	0.090	0.480	0.153	0.601	0.063
FEMALE	0.090	0.286	0.084	0.277	-0.006
MARRIED	0.057	0.231	0.102	0.303	0.045
AGE	23.669	2.563	24.044	2.920	0.375
xAGE	0.002	0.046	0.001	0.025	-0.001
PR_ENL	0.114	0.318	0.206	0.404	0.092
WHITE	0.772	0.419	0.801	0.400	0.029
BLACK	0.050	0.219	0.036	0.186	-0.014
HISPANIC	0.073	0.261	0.073	0.259	0.000
UNK_RACE	0.047	0.212	0.048	0.215	0.001
OTH_RACE	0.057	0.232	0.043	0.202	-0.014
NOT_CITIZEN	0.004	0.065	0.006	0.074	0.002
DERNAT	0.000	0.020	0.004	0.065	0.004
DERUS	0.026	0.158	0.020	0.140	-0.006
USBORN	0.945	0.229	0.943	0.232	-0.002
USNAT	0.025	0.155	0.027	0.163	0.002
Waivers					
MMO_WAIVER	0.003	0.054	0.003	0.058	0.000
MO_WAIVER	0.017	0.130	0.014	0.118	-0.003
ONTO_WAIVER	0.070	0.258	0.053	0.226	-0.017
DRUG_WAIVER	0.178	0.383	0.171	0.376	-0.007
DUI_WAIVER	0.024	0.154	0.025	0.155	0.001
TO_WAIVER	0.036	0.186	0.033	0.179	-0.003
PS_WAIVER	0.004	0.061	0.003	0.058	-0.001
TR_WAIVER	0.090	0.306	0.064	0.256	-0.026
REEN_WAIVER	0.004	0.061	0.004	0.065	0.000
PA_WAIVER	0.182	0.394	0.206	0.417	0.024

Table 18. Descriptive Statistics for Officers Separated and Not Separated Under Unfavorable Conditions.

	No Unfav. Separation		Unfav. Separation		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
Academics					
GPA	3.074	0.490	2.982	0.536	-0.092
xGPA	0.160	0.367	0.143	0.352	-0.017
MORE_COLL	0.014	0.118	0.000	0.000	-0.014
COLLEGE	0.913	0.282	0.901	0.300	-0.012
LESS_COLL	0.070	0.255	0.099	0.300	0.029
xCOLLEGE	0.003	0.055	0.000	0.000	-0.003
APTITUDE	0.975	0.552	0.894	0.499	-0.081
xAPTITUDE	0.386	0.487	0.374	0.486	-0.012
Application					
PFT	265.575	35.276	266.164	26.538	0.589
xPFT	0.249	0.433	0.264	0.443	0.015
REFERRALS	0.025	0.195	0.000	0.000	-0.025
PR_LEG_ACT	0.019	0.152	0.022	0.210	0.003
MCD12	0.081	0.274	0.077	0.268	-0.004
MCD1	0.122	0.327	0.132	0.340	0.010
MCD4	0.109	0.312	0.121	0.328	0.012
MCD6	0.088	0.284	0.066	0.250	-0.022
MCD8	0.084	0.278	0.110	0.314	0.026
MCD9	0.093	0.290	0.110	0.314	0.017
xMCD	0.422	0.494	0.385	0.489	-0.037
xAPP_DATA	0.066	0.248	0.099	0.300	0.033
Commissioning					
OCC	0.282	0.450	0.363	0.483	0.081
PLC	0.300	0.458	0.264	0.443	-0.036
ENL_PGM	0.128	0.334	0.143	0.352	0.015
USNA	0.129	0.335	0.110	0.314	-0.019
NROTC	0.155	0.362	0.121	0.328	-0.034
xENT_PGM	0.005	0.073	0.000	0.000	-0.005
COMM_2008	0.243	0.429	0.297	0.459	0.054
COMM_2009	0.255	0.436	0.297	0.459	0.042
COMM_2010	0.241	0.428	0.176	0.383	-0.065
COMM_2011	0.253	0.435	0.209	0.409	-0.044
xCOMM_FY	0.007	0.085	0.022	0.147	0.015

	No Unfav. Separation		Unfav. Separation		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
Demographics					
DEPENDENTS	0.126	0.551	0.154	0.729	0.028
FEMALE	0.084	0.278	0.209	0.409	0.125
MARRIED	0.084	0.277	0.044	0.206	-0.040
AGE	23.883	2.783	24.022	2.609	0.139
xAGE	0.001	0.033	0.011	0.105	0.010
PR_ENL	0.167	0.373	0.187	0.392	0.020
WHITE	0.791	0.406	0.626	0.486	-0.165
BLACK	0.041	0.198	0.110	0.314	0.069
HISPANIC	0.073	0.260	0.088	0.285	0.015
UNK_RACE	0.047	0.212	0.077	0.268	0.030
OTH_RACE	0.048	0.213	0.099	0.300	0.051
NOT_CITIZEN	0.005	0.071	0.000	0.000	-0.005
DERNAT	0.003	0.052	0.000	0.000	-0.003
DERUS	0.022	0.147	0.044	0.206	0.022
USBORN	0.944	0.230	0.923	0.268	-0.021
USNAT	0.026	0.159	0.033	0.180	0.007
Waivers					
MMO_WAIVER	0.003	0.057	0.000	0.000	-0.003
MO_WAIVER	0.015	0.122	0.033	0.180	0.018
ONTO_WAIVER	0.060	0.240	0.055	0.229	-0.005
DRUG_WAIVER	0.176	0.381	0.033	0.180	-0.143
DUI_WAIVER	0.024	0.155	0.022	0.147	-0.002
TO_WAIVER	0.035	0.183	0.022	0.147	-0.013
PS_WAIVER	0.004	0.060	0.000	0.000	-0.004
TR_WAIVER	0.073	0.274	0.165	0.478	0.092
REEN_WAIVER	0.004	0.064	0.000	0.000	-0.004
PA_WAIVER	0.196	0.408	0.165	0.373	-0.031

Table 19. Descriptive Statistics for Officers with and without a Legal Action While Commissioned.

	No Legal Action		Legal Action		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
Academics					
GPA	3.074	0.491	2.964	0.466	-0.110
xGPA	0.160	0.366	0.146	0.358	-0.014
MORE_COLL	0.014	0.118	0.000	0.000	-0.014
COLLEGE	0.912	0.283	0.927	0.264	0.015
LESS_COLL	0.071	0.256	0.073	0.264	0.002
xCOLLEGE	0.003	0.055	0.000	0.000	-0.003
APTITUDE	0.973	0.552	1.047	0.520	0.074
xAPTITUDE	0.385	0.487	0.415	0.499	0.030
Application					
PFT	265.593	35.254	264.333	15.289	-1.260
xPFT	0.249	0.433	0.268	0.449	0.019
REFERRALS	0.025	0.194	0.000	0.000	-0.025
PR_LEG_ACT	0.018	0.152	0.049	0.312	0.031
MCD12	0.081	0.274	0.073	0.264	-0.008
MCD1	0.122	0.327	0.073	0.264	-0.049
MCD4	0.110	0.313	0.049	0.218	-0.061
MCD6	0.088	0.283	0.122	0.331	0.034
MCD8	0.084	0.278	0.146	0.358	0.062
MCD9	0.093	0.291	0.049	0.218	-0.044
xMCD	0.421	0.494	0.488	0.506	0.067
xAPP_DATA	0.067	0.249	0.073	0.264	0.006
Commissioning					
OCC	0.284	0.451	0.244	0.435	-0.040
PLC	0.300	0.458	0.268	0.449	-0.032
ENL_PGM	0.128	0.334	0.220	0.419	0.092
USNA	0.129	0.335	0.122	0.331	-0.007
NROTC	0.155	0.362	0.146	0.358	-0.009
xENT_PGM	0.005	0.073	0.000	0.000	-0.005
COMM_2008	0.244	0.430	0.195	0.401	-0.049
COMM_2009	0.255	0.436	0.268	0.449	0.013
COMM_2010	0.240	0.427	0.293	0.461	0.053
COMM_2011	0.253	0.435	0.244	0.435	-0.009
xCOMM_FY	0.007	0.086	0.000	0.000	-0.007

	No Legal Action		Legal Action		
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Difference**
Demographics					
DEPENDENTS	0.126	0.554	0.122	0.557	-0.004
FEMALE	0.086	0.281	0.098	0.300	0.012
MARRIED	0.083	0.276	0.098	0.300	0.015
AGE	23.884	2.780	24.098	2.871	0.214
xAGE	0.001	0.035	0.000	0.000	-0.001
PR_ENL	0.167	0.373	0.244	0.435	0.077
WHITE	0.789	0.408	0.683	0.471	-0.106
BLACK	0.042	0.200	0.049	0.218	0.007
HISPANIC	0.073	0.259	0.122	0.331	0.049
UNK_RACE	0.048	0.213	0.073	0.264	0.025
OTH_RACE	0.048	0.215	0.073	0.264	0.025
NOT_CITIZEN	0.005	0.070	0.000	0.000	-0.005
DERNAT	0.003	0.052	0.000	0.000	-0.003
DERUS	0.022	0.148	0.000	0.000	-0.022
USBORN	0.944	0.231	0.951	0.218	0.007
USNAT	0.026	0.159	0.049	0.218	0.023
Waivers					
MMO_WAIVER	0.003	0.057	0.000	0.000	-0.003
MO_WAIVER	0.015	0.122	0.049	0.218	0.034
ONTO_WAIVER	0.060	0.240	0.073	0.264	0.013
DRUG_WAIVER	0.174	0.379	0.146	0.358	-0.028
DUI_WAIVER	0.024	0.154	0.024	0.156	0.000
TO_WAIVER	0.035	0.183	0.000	0.000	-0.035
PS_WAIVER	0.004	0.060	0.000	0.000	-0.004
TR_WAIVER	0.075	0.276	0.122	0.510	0.047
REEN_WAIVER	0.004	0.064	0.000	0.000	-0.004
PA_WAIVER	0.194	0.406	0.390	0.494	0.196

APPENDIX D. ECONOMETRIC MODEL RESULTS

Table 20. Selected for Career Designation Model Results.

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
GPA	0.1592***	0.0621***
	(0.0403)	(0.0157)
xGPA	0.7392***	0.2597***
	(0.1715)	(0.0514)
MORE_COLL	-0.0542	-0.0212
	(0.1535)	(0.0604)
LESS_COLL	-0.1189	-0.0468
	(0.0773)	(0.0306)
xCOLLEGE	-0.6194*	-0.2422*
	(0.3402)	(0.1252)
APTITUDE	-0.1021**	-0.0398**
	(0.0409)	(0.0159)
xAPTITUDE	-0.1437**	-0.0561**
	(0.0657)	(0.0257)
Application		
PFT	0.0032***	0.0012***
	(0.0008)	(0.0003)
xPFT	1.1593***	0.3904***
	(0.2029)	(0.0539)
REFERRALS	0.2333**	0.0909**
	(0.0957)	(0.0373)
PR_LEG_ACT	0.0819	0.0319
	(0.1265)	(0.0493)
MCD1	0.2024**	0.0773***
	(0.0793)	(0.0295)
MCD4	0.1976**	0.0754**
	(0.0805)	(0.0299)
MCD6	0.0408	0.0159
	(0.0845)	(0.0327)
MCD8	0.1179	0.0454
	(0.0845)	(0.0321)
MCD9	0.2498***	0.0945***
	(0.0837)	(0.0305)
xMCD	-0.2414	-0.0942
	(0.2321)	(0.0905)
xAPP_DATA	-0.2284*	-0.0903*
	(0.1250)	(0.0498)
Commissioning		

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
PLC	-0.1730*** (0.0528)	-0.0678*** (0.0208)
ENL_PGM	0.6749*** (0.2430)	0.2379*** (0.0735)
USNA	0.5950** (0.2678)	0.2132** (0.0847)
NROTC	0.3991* (0.2276)	0.1487* (0.0797)
xENT_PGM	-1.3815*** (0.4185)	-0.4650*** (0.0858)
COMM_2009	-0.0383 (0.0499)	-0.0149 (0.0195)
COMM_2010	-0.0081 (0.0549)	-0.0031 (0.0214)
COMM_2011	-0.5608*** (0.0584)	-0.2202*** (0.0226)
xCOMM_FY	0.1447 (0.2376)	0.0554 (0.0889)
Demographics		
DEPENDENTS	-0.0183 (0.0403)	-0.0071 (0.0157)
FEMALE	-0.1475** (0.0636)	-0.0581** (0.0253)
MARRIED	0.2424*** (0.0832)	0.0917*** (0.0303)
AGE	-0.0082 (0.0110)	-0.0032 (0.0043)
xAGE	-1.2187** (0.6144)	-0.4277*** (0.1486)
PR_ENL	0.1573 (0.1102)	0.0605 (0.0417)
BLACK	-0.3138*** (0.0892)	-0.1244*** (0.0354)
HISPANIC	-0.0538 (0.0713)	-0.0211 (0.0280)
UNK_RACE	-0.2633*** (0.0883)	-0.1043*** (0.0351)
OTH_RACE	-0.2228*** (0.0846)	-0.0881*** (0.0337)
NOT_CITIZEN	0.2122 (0.2593)	0.0802 (0.0945)
DERNAT	1.6246*** (0.5835)	0.3830*** (0.0437)

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
DERUS	0.0035 (0.1154)	0.0014 (0.0450)
USNAT	0.0241 (0.1181)	0.0094 (0.0458)
Waivers		
MMO_WAIVER	-0.0036 (0.3189)	-0.0014 (0.1244)
MO_WAIVER	-0.1105 (0.1417)	-0.0435 (0.0562)
ONTO_WAIVER	-0.0908 (0.0737)	-0.0354 (0.0287)
DRUG_WAIVER	0.0439 (0.0490)	0.0171 (0.0190)
DUI_WAIVER	0.0038 (0.1139)	0.0015 (0.0443)
TO_WAIVER	0.0634 (0.0963)	0.0245 (0.0370)
PS_WAIVER	0.0620 (0.2897)	0.0240 (0.1112)
TR_WAIVER	-0.1424** (0.0643)	-0.0555** (0.0251)
REEN_WAIVER	0.0795 (0.2774)	0.0307 (0.1059)
PA_WAIVER	0.0935** (0.0459)	0.0365** (0.0179)
Constant	-0.9007** (0.3698)	
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

Table 21. Separated Under Unfavorable Conditions Model Results.

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
GPA	-0.1080 (0.0986)	-0.0030 (0.0027)
xGPA	-0.4519 (0.4330)	-0.0091 (0.0062)
LESS_COLL	0.1565 (0.1801)	0.0051 (0.0068)
APTITUDE	-0.0933 (0.1079)	-0.0026 (0.0030)
xAPTITUDE	0.0601 (0.1607)	0.0017 (0.0046)
Application		
PFT	-0.0025 (0.0021)	-0.0001 (0.0001)
xPFT	-0.6418 (0.5691)	-0.0132 (0.0091)
PR_LEG_ACT	0.0763 (0.2706)	0.0021 (0.0075)
MCD1	0.1550 (0.2103)	0.0049 (0.0076)
MCD4	0.1464 (0.2176)	0.0046 (0.0078)
MCD6	-0.0679 (0.2388)	-0.0018 (0.0058)
MCD8	0.1758 (0.2189)	0.0058 (0.0084)
MCD9	0.1977 (0.2201)	0.0066 (0.0088)
xMCD	-0.3570 (0.4773)	-0.0095 (0.0125)
xAPP_DATA	0.6402** (0.3200)	0.0342 (0.0277)
Commissioning		
PLC	-0.1256 (0.1341)	-0.0033 (0.0033)
ENL_PGM	0.5681 (0.4714)	0.0263 (0.0329)
USNA	-0.3340 (0.4638)	-0.0071 (0.0073)
NROTC	0.0258 (0.4558)	0.0007 (0.0132)
COMM_2009	-0.0210	-0.0006

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
	(0.1190)	(0.0032)
COMM_2010	-0.1165 (0.1405)	-0.0030 (0.0034)
COMM_2011	-0.0422 (0.1464)	-0.0011 (0.0039)
xCOMM_FY	0.4284 (0.4554)	0.0194 (0.0306)
Demographics		
DEPENDENTS	0.1225 (0.0892)	0.0034 (0.0025)
FEMALE	0.4194*** (0.1253)	0.0176** (0.0074)
MARRIED	-0.5261** (0.2437)	-0.0091*** (0.0025)
AGE	-0.0168 (0.0268)	-0.0005 (0.0007)
xAGE	-0.1662 (0.9814)	-0.0038 (0.0183)
PR_ENL	0.0440 (0.2862)	0.0013 (0.0085)
BLACK	0.4541*** (0.1675)	0.0205* (0.0112)
HISPANIC	0.0916 (0.1676)	0.0028 (0.0056)
UNK_RACE	0.4459** (0.1848)	0.0199* (0.0120)
OTH_RACE	0.4171** (0.1687)	0.0180* (0.0104)
DERUS	0.0912 (0.2596)	0.0028 (0.0088)
USNAT	-0.0987 (0.2617)	-0.0025 (0.0058)
Waivers		
MO_WAIVER	0.3103 (0.3117)	0.0122 (0.0166)
ONTO_WAIVER	-0.0196 (0.2022)	-0.0005 (0.0056)
DRUG_WAIVER	-0.7255*** (0.2057)	-0.0127*** (0.0022)
DUI_WAIVER	0.0354 (0.3025)	0.0010 (0.0091)
TO_WAIVER	-0.1575 (0.2943)	-0.0037 (0.0058)

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
TR_WAIVER	0.2606** (0.1307)	0.0072** (0.0037)
PA_WAIVER	-0.0479 (0.1234)	-0.0013 (0.0034)
Constant	-0.7468 (0.9402)	
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

Table 22. Legal Action While Commissioned Model Results.

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
GPA	-0.1692 (0.1308)	-0.0025 (0.0020)
xGPA	-0.6188 (0.5591)	-0.0059* (0.0034)
LESS_COLL	0.0707 (0.2728)	0.0011 (0.0048)
APTITUDE	0.1502 (0.1475)	0.0023 (0.0022)
xAPTITUDE	0.3115 (0.2284)	0.0052 (0.0043)
Application		
PFT	-0.0026 (0.0026)	-0.0000 (0.0000)
xPFT	-0.6962 (0.7052)	-0.0075 (0.0059)
PR_LEG_ACT	0.1796 (0.2860)	0.0027 (0.0043)
MCD1	-0.1778 (0.2984)	-0.0023 (0.0032)
MCD4	-0.2283 (0.3272)	-0.0028 (0.0031)
MCD6	0.1113 (0.2822)	0.0019 (0.0054)
MCD8	0.2144 (0.2766)	0.0041 (0.0065)
MCD9	-0.2132	-0.0026

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
	(0.3363)	(0.0032)
xMCD	-0.5645 (0.9220)	-0.0082 (0.0137)
xAPP_DATA	0.5197 (0.3897)	0.0142 (0.0170)
Commissioning		
PLC	0.0393 (0.1900)	0.0006 (0.0030)
ENL_PGM	1.0309 (0.9397)	0.0447 (0.0825)
USNA	0.3125 (0.9401)	0.0064 (0.0254)
NROTC	0.5578 (0.9121)	0.0143 (0.0362)
COMM_2009	0.0611 (0.1741)	0.0010 (0.0028)
COMM_2010	0.2034 (0.1818)	0.0035 (0.0036)
COMM_2011	0.0892 (0.2067)	0.0014 (0.0035)
Demographics		
DEPENDENTS	-0.0510 (0.1281)	-0.0008 (0.0019)
FEMALE	-0.0218 (0.2105)	-0.0003 (0.0030)
MARRIED	0.0334 (0.2466)	0.0005 (0.0040)
AGE	-0.0240 (0.0286)	-0.0004 (0.0004)
PR_ENL	-0.0912 (0.4037)	-0.0013 (0.0052)
BLACK	0.0937 (0.2838)	0.0016 (0.0053)
HISPANIC	0.2063 (0.2001)	0.0039 (0.0046)
UNK_RACE	0.2830 (0.2557)	0.0059 (0.0072)
OTH_RACE	0.1854 (0.2431)	0.0035 (0.0055)
USNAT	0.0731 (0.3250)	0.0012 (0.0058)
Waivers		
MO_WAIVER	0.4716	0.0129

Variable	Probit Results	Partial Effects (dy/dx)
Academics		
	(0.3472)	(0.0152)
ONTO_WAIVER	0.1186 (0.2416)	0.0018 (0.0036)
DRUG_WAIVER	-0.0977 (0.1755)	-0.0014 (0.0022)
DUI_WAIVER	0.0001 (0.3903)	0.0000 (0.0059)
TR_WAIVER	0.2291 (0.1884)	0.0034 (0.0028)
PA_WAIVER	0.3921*** (0.1320)	0.0059*** (0.0020)
Constant	-1.2020 (1.0814)	
Observations	5,650	5,650
Standard errors in parentheses		
*** Significant at 1%; ** Significant at 5%; * Significant at 10%		

APPENDIX E. CORRELATION MATRIX

	GPA	xGPA	MORE_C~L	COLLEGE	LESS_C~L	xCOLLEGE	APTITUDE
GPA	1.0000						
xGPA	**-0.9284**	1.0000					
MORE_COLL	0.0507	-0.0149	1.0000				
COLLEGE	-0.0940	0.0735	**-0.3843**	1.0000			
LESS_COLL	0.0741	-0.0711	-0.0328	**-0.8896**	1.0000		
xCOLLEGE	0.0295	-0.0151	-0.0065	-0.1773	-0.0151	1.0000	
APTITUDE	**0.3402**	**-0.3215**	0.0143	-0.1300	0.1271	0.0456	1.0000
xAPTITUDE	**-0.4243**	**0.4423**	-0.0292	0.1437	-0.1387	-0.0302	**-0.7388**
PFT	**0.4755**	**-0.5072**	0.0328	-0.1517	0.1459	0.0307	**0.3035**
xPFT	**-0.3902**	**0.4220**	-0.0304	0.1223	-0.1159	-0.0242	**-0.2683**
REFERRALS	0.0484	-0.0551	-0.0151	0.0392	-0.0349	-0.0069	0.0212
PR_LEG_ACT	0.0291	-0.0244	0.0150	-0.0155	0.0116	-0.0067	0.0560
MCD12	0.1257	-0.1298	-0.0024	-0.0451	0.0417	0.0427	0.0790
MCD1	0.1365	-0.1593	0.0294	-0.0780	0.0685	0.0191	0.1349
MCD4	0.1399	-0.1527	0.0017	-0.0499	0.0495	0.0222	0.1328
MCD6	0.1042	-0.1302	0.0162	-0.0408	0.0388	-0.0057	-0.0448
MCD8	0.1052	-0.1292	-0.0092	-0.0136	0.0178	0.0065	0.0038
MCD9	0.1333	-0.1395	0.0086	-0.0669	0.0736	-0.0176	0.1397
xMCD	**-0.4458**	**0.5035**	-0.0284	0.1785	-0.1753	-0.0404	**-0.2755**
xAPP_DATA	**-0.5687**	**0.6126**	-0.0076	0.0124	-0.0098	-0.0017	-0.2148
OCC	**0.2602**	**-0.2730**	0.0690	**-0.3553**	**0.3464**	0.0659	0.1693
PLC	0.2316	**-0.2786**	-0.0384	0.1575	-0.1516	-0.0218	0.1243
ENL_PGM	0.1346	-0.1152	0.0174	0.0609	-0.0706	-0.0211	**0.2772**
USNA	**-0.8150**	**0.8780**	-0.0143	0.1061	-0.1060	-0.0211	**-0.3264**
NROTC	0.0443	-0.0475	-0.0426	0.1274	-0.1160	-0.0235	**-0.3239**
xENT_PGM	-0.1556	0.1676	0.0120	-0.1927	0.1985	0.0405	0.0073
COMM_2008	0.0291	-0.0474	0.0060	0.0813	-0.0875	-0.0237	0.0166
COMM_2009	0.0175	-0.0294	0.0201	0.0653	-0.0760	-0.0248	0.0042
COMM_2010	-0.0025	0.0061	-0.0352	-0.0280	0.0456	0.0069	0.0064
COMM_2011	-0.0472	0.0734	0.0071	-0.1223	0.1227	0.0424	-0.0141
xCOMM_FY	0.0169	-0.0152	0.0072	0.0195	-0.0239	-0.0048	-0.0645
DEPENDENTS	0.1071	-0.0775	0.0790	-0.0435	0.0133	-0.0067	0.1225
FEMALE	-0.1055	0.1223	0.0278	-0.0273	0.0185	-0.0054	-0.1058
MARRIED	0.1170	-0.0926	0.0516	-0.0474	0.0297	-0.0048	0.1213
AGE	0.1725	-0.1674	0.0905	-0.1279	0.0962	0.0161	**0.2990**
xAGE	-0.0178	0.0121	-0.0042	0.0109	-0.0097	-0.0019	-0.0329
PR_ENL	0.1368	-0.1110	0.0234	0.0113	-0.0198	-0.0159	**0.2762**
WHITE	0.0939	-0.0820	-0.0156	-0.0124	0.0181	0.0127	0.0226
BLACK	-0.0279	0.0133	0.0054	-0.0170	0.0152	0.0047	-0.0101
HISPANIC	-0.0113	0.0088	0.0416	-0.0279	0.0124	-0.0031	-0.0019
UNK_RACE	-0.1270	0.1350	-0.0129	0.0526	-0.0495	-0.0124	-0.0615
OTH_RACE	-0.0119	-0.0020	-0.0129	0.0206	-0.0142	-0.0124	0.0303
NOT_CITIZEN	-0.0153	0.0118	-0.0083	0.0124	-0.0091	-0.0038	-0.0116
DERNAT	-0.0040	0.0057	0.0231	-0.0205	0.0126	-0.0028	0.0227
DERUS	0.0130	-0.0194	0.0015	-0.0267	0.0260	0.0129	0.0000
USBORN	-0.0201	0.0285	-0.0160	0.0151	-0.0093	-0.0003	-0.0436
USNAT	0.0252	-0.0295	0.0180	0.0041	-0.0109	-0.0090	0.0589
MMO_WAIVER	0.0270	-0.0246	-0.0067	0.0064	-0.0033	-0.0031	0.0155
MO_WAIVER	0.0415	-0.0545	-0.0026	-0.0121	0.0104	0.0194	0.0366
ONTO_WAIVER	0.0818	-0.1052	0.0078	-0.0292	0.0316	-0.0138	0.0450
DRUG_WAIVER	0.1748	-0.1924	0.0328	-0.0708	0.0594	0.0174	0.1369
DUI_WAIVER	0.0452	-0.0658	-0.0091	0.0125	-0.0123	0.0122	0.0316
TO_WAIVER	0.0716	-0.0795	0.0024	-0.0138	0.0087	0.0251	0.0595
PS_WAIVER	0.0172	-0.0260	-0.0071	-0.0132	0.0185	-0.0033	0.0137
TR_WAIVER	0.1002	-0.1173	0.0167	-0.0291	0.0227	0.0084	0.0815
REEN_WAIVER	0.0301	-0.0279	-0.0076	0.0001	0.0041	-0.0035	0.0180
PA_WAIVER	0.1445	-0.1561	-0.0091	-0.0401	0.0524	-0.0185	0.1166

	xAPTIT~E	PFT	xPFT	REFERR~S	PR_LEG~T	MCD12	MCD1
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE	1.0000						
PFT	**-0.4328**	1.0000					
xPFT	**0.3855**	**-0.9667**	1.0000				
REFERRALS	-0.0568	0.0758	-0.0729	1.0000			
PR_LEG_ACT	-0.0959	-0.0022	0.0075	-0.0034	1.0000		
MCD12	-0.0974	0.1778	-0.1657	-0.0008	-0.0276	1.0000	
MCD1	-0.1869	0.2176	-0.2110	0.0846	-0.0239	-0.1109	1.0000
MCD4	-0.1889	0.2117	-0.1995	0.0438	-0.0240	-0.1043	-0.1305
MCD6	0.0173	0.1784	-0.1733	0.0093	-0.0091	-0.0925	-0.1156
MCD8	-0.0438	0.1831	-0.1755	0.0273	-0.0079	-0.0906	-0.1133
MCD9	-0.1995	0.1916	-0.1846	0.0069	-0.0070	-0.0953	-0.1192
xMCD	**0.4292**	**-0.6945**	**0.6644**	-0.1080	0.0601	**-0.2543**	**-0.3180**
xAPP_DATA	**0.2862**	**-0.4476**	**0.4630**	-0.0338	0.0001	-0.0795	-0.0994
OCC	-0.2291	**0.3797**	**-0.3554**	-0.0572	-0.0326	0.1675	0.1802
PLC	-0.2270	**0.3649**	**-0.3556**	0.1675	-0.0313	0.1049	0.1583
ENL_PGM	**-0.3016**	-0.1233	0.1481	-0.0485	0.1639	-0.1123	-0.1429
USNA	**0.4467**	**-0.5382**	**0.4374**	-0.0487	-0.0466	-0.1145	-0.1432
NROTC	**0.4448**	**-0.2980**	**0.3256**	-0.0490	-0.0486	-0.1274	-0.1548
xENT_PGM	-0.0328	-0.1225	0.1267	-0.0092	0.1022	-0.0218	-0.0272
COMM_2008	-0.0579	-0.0229	0.0303	0.0135	-0.0017	0.0252	0.0215
COMM_2009	-0.0003	-0.1097	0.1178	0.0141	0.0137	0.0051	0.0287
COMM_2010	0.0103	-0.0801	0.1123	-0.0003	-0.0087	0.0023	-0.0218
COMM_2011	0.0325	0.2357	**-0.2836**	-0.0251	-0.0014	-0.0272	-0.0223
xCOMM_FY	0.0754	-0.1226	0.1263	-0.0109	-0.0105	-0.0258	-0.0322
DEPENDENTS	-0.1442	0.1202	-0.1121	-0.0189	0.0786	0.0303	-0.0623
FEMALE	0.0958	-0.1318	0.1212	-0.0324	-0.0208	-0.0201	-0.0625
MARRIED	-0.1578	0.0945	-0.0875	-0.0214	0.0973	0.0301	-0.0787
AGE	**-0.3795**	0.0857	-0.0618	-0.0468	0.2114	0.0433	-0.0795
xAGE	0.0445	-0.0468	0.0494	-0.0045	-0.0043	-0.0105	-0.0131
PR_ENL	**-0.3312**	-0.0825	0.1079	-0.0493	**0.2518**	-0.0587	-0.1392
WHITE	0.0039	0.0521	-0.0585	0.0052	-0.0386	-0.0843	0.0346
BLACK	-0.0265	0.0139	-0.0095	0.0012	0.0094	-0.0037	-0.0369
HISPANIC	-0.0417	-0.0146	0.0132	-0.0075	0.0455	0.0551	-0.0136
UNK_RACE	0.0829	-0.1108	0.1166	-0.0031	-0.0113	0.0139	-0.0063
OTH_RACE	-0.0151	0.0165	-0.0126	0.0012	0.0208	0.0830	-0.0088
NOT_CITIZEN	-0.0021	-0.0155	0.0134	0.0045	-0.0084	0.0169	-0.0101
DERNAT	-0.0338	0.0068	-0.0059	-0.0065	-0.0062	-0.0028	0.0018
DERUS	0.0027	0.0409	-0.0486	0.0168	-0.0111	0.0354	0.0033
USBORN	0.0592	-0.0364	0.0420	-0.0082	-0.0297	-0.0323	-0.0036
USNAT	-0.0758	0.0184	-0.0183	-0.0037	0.0592	0.0075	0.0063
MMO_WAIVER	-0.0319	0.0270	-0.0253	-0.0072	0.0546	-0.0168	0.0270
MO_WAIVER	-0.0577	0.0737	-0.0721	0.0065	0.0223	-0.0109	0.0369
ONTO_WAIVER	-0.1121	0.1418	-0.1361	-0.0012	0.0129	0.0170	0.0667
DRUG_WAIVER	-0.1974	**0.2561**	-0.2409	0.0169	0.0174	0.0631	0.1032
DUI_WAIVER	-0.0640	0.0839	-0.0833	-0.0081	0.0406	0.0200	0.0322
TO_WAIVER	-0.0754	0.1042	-0.0998	-0.0037	0.0025	0.1074	-0.0227
PS_WAIVER	-0.0349	0.0389	-0.0344	0.0079	-0.0072	-0.0177	0.0416
TR_WAIVER	-0.1412	0.1681	-0.1552	0.0154	-0.0243	0.0292	0.0943
REEN_WAIVER	-0.0392	0.0403	-0.0369	0.0063	0.0285	0.0318	0.0017
PA_WAIVER	-0.2046	0.2006	-0.1817	-0.0068	0.0919	0.0174	0.0376

	MCD4	MCD6	MCD8	MCD9	xMCD	xAPP_D~A	OCC
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4	1.0000						
MCD6	-0.1088	1.0000					
MCD8	-0.1067	-0.0945	1.0000				
MCD9	-0.1122	-0.0994	-0.0974	1.0000			
xMCD	**-0.2993**	**-0.2652**	**-0.2599**	**-0.2734**	1.0000		
xAPP_DATA	-0.0936	-0.0829	-0.0813	-0.0855	**0.3126**	1.0000	
OCC	0.1534	0.1250	0.1061	0.1545	**-0.5315**	-0.1679	1.0000
PLC	0.1671	0.1598	0.1728	0.1395	**-0.5396**	-0.1746	**-0.4111**
ENL_PGM	-0.1328	-0.1192	-0.1168	-0.1228	**0.4471**	-0.0982	-0.2413
USNA	-0.1348	-0.1194	-0.1171	-0.1231	**0.4503**	**0.6095**	-0.2418
NROTC	-0.1499	-0.1329	-0.1302	-0.1369	**0.4979**	-0.0985	**-0.2690**
xENT_PGM	-0.0256	-0.0227	-0.0222	-0.0234	0.0855	**0.2736**	-0.0459
COMM_2008	0.0200	0.0403	0.0593	0.0197	-0.1090	0.1244	0.1575
COMM_2009	0.0105	0.0000	0.0052	0.0095	-0.0370	0.1545	0.0503
COMM_2010	-0.0165	-0.0137	-0.0194	-0.0058	0.0459	-0.1252	-0.0869
COMM_2011	-0.0081	-0.0224	-0.0410	-0.0178	0.0814	-0.1537	-0.1108
xCOMM_FY	-0.0303	-0.0196	-0.0189	-0.0277	0.0930	-0.0066	-0.0498
DEPENDENTS	-0.0194	-0.0459	-0.0269	0.0030	0.0765	-0.0608	0.0219
FEMALE	-0.0391	-0.0288	-0.0235	-0.0159	0.1163	0.0999	-0.0060
MARRIED	-0.0191	-0.0074	0.0121	-0.0322	0.0639	-0.0803	0.0485
AGE	-0.0551	-0.0214	0.0129	-0.0194	0.0799	-0.0959	0.1338
xAGE	-0.0123	0.0068	-0.0107	-0.0113	0.0311	0.0310	-0.0110
PR_ENL	-0.1129	-0.0989	-0.0716	-0.0911	**0.3467**	-0.0663	-0.1553
WHITE	0.0461	0.0284	0.0058	0.0604	-0.0604	-0.0002	0.0269
BLACK	0.0150	0.0229	-0.0348	-0.0056	0.0267	0.0191	0.0146
HISPANIC	-0.0530	-0.0108	0.0337	-0.0551	0.0316	0.0174	-0.0114
UNK_RACE	-0.0371	-0.0354	-0.0127	-0.0016	0.0483	-0.0472	-0.0491
OTH_RACE	-0.0002	-0.0267	-0.0068	-0.0412	0.0034	0.0089	-0.0017
NOT_CITIZEN	0.0004	-0.0034	-0.0119	0.0132	-0.0020	0.0330	0.0191
DERNAT	-0.0071	0.0083	0.0090	0.0072	-0.0092	0.0138	0.0134
DERUS	0.0472	0.0140	0.0076	-0.0091	-0.0585	-0.0319	0.0406
USBORN	-0.0160	0.0094	0.0204	0.0160	0.0041	0.0262	-0.0274
USNAT	-0.0187	-0.0277	-0.0342	-0.0260	0.0540	-0.0262	-0.0128
MMO_WAIVER	-0.0097	0.0379	-0.0059	-0.0181	-0.0101	-0.0151	0.0202
MO_WAIVER	0.0621	0.0373	0.0135	0.0194	-0.0981	-0.0334	0.0872
ONTO_WAIVER	0.0586	0.0289	0.0163	0.1026	-0.1768	-0.0669	0.1271
DRUG_WAIVER	0.1338	0.0388	0.0279	0.0750	**-0.2700**	-0.1225	0.2274
DUI_WAIVER	0.0254	0.0116	0.0671	0.0165	-0.1026	-0.0422	0.1219
TO_WAIVER	0.0460	0.0478	0.0298	0.0200	-0.1296	-0.0503	0.1338
PS_WAIVER	0.0173	0.0131	-0.0181	0.0322	-0.0449	-0.0159	0.0220
TR_WAIVER	0.0953	0.0624	0.0620	0.0191	-0.2208	-0.0719	0.2388
REEN_WAIVER	-0.0046	-0.0002	0.0404	0.0274	-0.0546	-0.0171	0.0647
PA_WAIVER	0.0070	0.0410	0.0066	0.0647	-0.1042	-0.1283	0.1009

	PLC	ENL_PGM	USNA	NROTC	xENT_PGM	COM~2008	COM~2009
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4							
MCD6							
MCD8							
MCD9							
xMCD							
xAPP_DATA							
OCC							
PLC	1.0000						
ENL_PGM	**-0.2509**	1.0000					
USNA	**-0.2515**	-0.1476	1.0000				
NROTC	**-0.2797**	-0.1641	-0.1645	1.0000			
xENT_PGM	-0.0478	-0.0280	-0.0281	-0.0313	1.0000		
COMM_2008	-0.0414	-0.0270	-0.0279	-0.0961	0.0152	1.0000	
COMM_2009	-0.0048	0.0009	-0.0098	-0.0520	0.0186	**-0.3329**	1.0000
COMM_2010	0.0349	-0.0002	0.0262	0.0379	0.0102	**-0.3195**	**-0.3294**
COMM_2011	0.0199	0.0326	0.0182	0.0744	-0.0425	**-0.3305**	**-0.3408**
xCOMM_FY	-0.0431	-0.0332	-0.0333	0.1795	-0.0063	-0.0492	-0.0507
DEPENDENTS	-0.1043	**0.3099**	-0.0876	-0.0974	-0.0166	0.0364	-0.0148
FEMALE	-0.1171	-0.0125	0.1413	0.0375	-0.0051	0.0013	-0.0054
MARRIED	-0.1169	**0.3372**	-0.1061	-0.1216	-0.0220	0.0471	0.0002
AGE	-0.2202	**0.6155**	-0.1983	**-0.3059**	0.1614	0.0428	0.0244
xAGE	-0.0230	-0.0135	-0.0135	0.0684	-0.0026	-0.0200	-0.0206
PR_ENL	-0.2214	**0.8567**	-0.1666	-0.1903	0.1305	-0.0071	0.0139
WHITE	0.0400	-0.0906	-0.0870	0.0857	-0.0276	0.0220	0.0146
BLACK	-0.0433	0.0685	0.0046	-0.0327	0.0092	-0.0111	0.0222
HISPANIC	-0.0226	0.1090	0.0011	-0.0717	0.0634	0.0027	0.0077
UNK_RACE	-0.0078	-0.0351	0.1659	-0.0467	-0.0165	-0.0309	-0.0458
OTH_RACE	-0.0006	0.0116	-0.0060	0.0010	-0.0165	-0.0041	-0.0118
NOT_CITIZEN	-0.0173	-0.0036	0.0193	-0.0154	-0.0051	0.0204	0.0124
DERNAT	-0.0037	0.0008	0.0007	-0.0221	0.0436	0.0187	0.0092
DERUS	0.0217	-0.0278	-0.0140	-0.0370	-0.0113	0.0130	-0.0154
USBORN	0.0250	-0.0943	0.0244	0.0697	-0.0134	-0.0335	0.0171
USNAT	-0.0473	0.1647	-0.0303	-0.0521	0.0184	0.0222	-0.0205
MMO_WAIVER	-0.0095	0.0347	-0.0217	-0.0242	-0.0041	0.0117	0.0101
MO_WAIVER	0.0187	-0.0351	-0.0481	-0.0535	-0.0091	0.0327	0.0289
ONTO_WAIVER	0.0647	-0.0455	-0.0964	-0.1052	-0.0183	0.0464	0.0069
DRUG_WAIVER	0.0628	-0.0114	-0.1765	-0.1821	-0.0335	0.0251	0.0105
DUI_WAIVER	-0.0108	-0.0196	-0.0609	-0.0613	-0.0116	0.0462	0.0308
TO_WAIVER	0.0062	-0.0288	-0.0696	-0.0807	-0.0138	0.0445	0.0076
PS_WAIVER	0.0261	-0.0229	-0.0229	-0.0173	-0.0044	0.0078	0.0197
TR_WAIVER	-0.0009	-0.0975	-0.1035	-0.1063	-0.0197	0.0663	0.0348
REEN_WAIVER	-0.0054	-0.0245	-0.0246	-0.0273	-0.0047	0.0090	0.0263
PA_WAIVER	0.0102	0.1664	-0.1446	-0.1515	-0.0351	-0.0232	-0.0355

	COM~2010	COM~2011	xCOMM_FY	DEPEND~S	FEMALE	MARRIED	AGE
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4							
MCD6							
MCD8							
MCD9							
xMCD							
xAPP_DATA							
OCC							
PLC							
ENL_PGM							
USNA							
NROTC							
xENT_PGM							
COMM_2008							
COMM_2009							
COMM_2010	1.0000						
COMM_2011	**-0.3270**	1.0000					
xCOMM_FY	-0.0487	-0.0503	1.0000				
DEPENDENTS	0.0080	-0.0251	-0.0197	1.0000			
FEMALE	-0.0018	0.0039	0.0101	-0.0257	1.0000		
MARRIED	-0.0025	-0.0392	-0.0260	**0.5520**	-0.0171	1.0000	
AGE	-0.0193	-0.0165	-0.1583	**0.3549**	-0.0501	**0.4131**	1.0000
xAGE	-0.0198	-0.0205	**0.4070**	-0.0080	0.0250	-0.0106	**-0.2895**
PR_ENL	-0.0041	0.0048	-0.0388	**0.3415**	-0.0212	**0.3811**	**0.7098**
WHITE	-0.0606	0.0222	0.0046	-0.0520	-0.0637	-0.0367	-0.0988
BLACK	-0.0300	0.0176	0.0026	0.0597	0.0401	0.0434	0.0864
HISPANIC	-0.0138	0.0049	-0.0086	0.0534	0.0318	0.0481	0.1051
UNK_RACE	0.1366	-0.0596	0.0092	-0.0070	0.0212	-0.0144	-0.0421
OTH_RACE	0.0230	-0.0047	-0.0100	-0.0144	0.0241	-0.0144	0.0223
NOT_CITIZEN	-0.0269	-0.0049	-0.0060	0.0305	-0.0030	0.0257	0.0123
DERNAT	-0.0049	-0.0221	-0.0045	0.0193	-0.0159	0.0094	0.0215
DERUS	-0.0129	0.0125	0.0139	0.0071	-0.0058	0.0257	-0.0145
USBORN	0.0228	-0.0072	0.0036	-0.0537	-0.0055	-0.0748	-0.1050
USNAT	-0.0072	0.0085	-0.0142	0.0522	0.0202	0.0706	0.1539
MMO_WAIVER	-0.0171	-0.0040	-0.0049	0.0211	-0.0174	0.0399	0.0428
MO_WAIVER	0.0004	-0.0595	-0.0108	0.0338	-0.0231	0.0093	0.0399
ONTO_WAIVER	-0.0391	-0.0101	-0.0217	-0.0225	-0.0535	-0.0273	0.0353
DRUG_WAIVER	0.0021	-0.0295	-0.0397	0.0396	-0.0547	0.0176	0.1085
DUI_WAIVER	-0.0192	-0.0551	-0.0137	0.0447	-0.0282	0.0272	0.0860
TO_WAIVER	-0.0241	-0.0247	-0.0163	0.0132	-0.0303	0.0208	0.0770
PS_WAIVER	-0.0126	-0.0141	-0.0052	-0.0136	-0.0077	-0.0179	-0.0166
TR_WAIVER	-0.0188	-0.0775	-0.0233	0.0065	0.0237	0.0020	0.0295
REEN_WAIVER	-0.0034	-0.0308	-0.0055	0.0356	0.0001	0.0311	0.0510
PA_WAIVER	0.0451	0.0225	-0.0416	0.1634	0.0069	0.1405	0.2401

	xAGE	PR_ENL	WHITE	BLACK	HISPANIC	UNK_RACE	OTH_RACE
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4							
MCD6							
MCD8							
MCD9							
xMCD							
xAPP_DATA							
OCC							
PLC							
ENL_PGM							
USNA							
NROTC							
xENT_PGM							
COMM_2008							
COMM_2009							
COMM_2010							
COMM_2011							
xCOMM_FY							
DEPENDENTS							
FEMALE							
MARRIED							
AGE							
xAGE	1.0000						
PR_ENL	-0.0158	1.0000					
WHITE	-0.0309	-0.1096	1.0000				
BLACK	0.0179	0.0802	**-0.4012**	1.0000			
HISPANIC	-0.0099	0.1358	**-0.5422**	-0.0587	1.0000		
UNK_RACE	0.0388	-0.0462	**-0.4356**	-0.0471	-0.0637	1.0000	
OTH_RACE	0.0154	0.0156	**-0.4356**	-0.0471	-0.0637	-0.0512	1.0000
NOT_CITIZEN	-0.0024	-0.0035	-0.0330	0.0370	0.0198	-0.0157	0.0201
DERNAT	-0.0018	0.0046	-0.0405	-0.0107	0.0118	0.0043	0.0683
DERUS	0.0279	-0.0222	-0.0457	0.0147	0.0373	-0.0132	0.0412
USBORN	-0.0130	-0.1181	0.2163	-0.0478	-0.1669	0.0204	-0.1848
USNAT	-0.0058	0.1928	-0.2440	0.0432	0.1950	-0.0116	0.1989
MMO_WAIVER	-0.0020	0.0420	-0.0014	-0.0118	0.0202	-0.0128	0.0018
MO_WAIVER	-0.0044	-0.0098	-0.0124	-0.0045	0.0199	0.0185	-0.0149
ONTO_WAIVER	-0.0088	-0.0253	0.0238	-0.0153	-0.0225	0.0187	-0.0224
DRUG_WAIVER	-0.0162	0.0147	0.0306	-0.0161	-0.0111	-0.0279	-0.0018
DUI_WAIVER	-0.0056	0.0244	0.0149	-0.0042	-0.0006	-0.0091	-0.0145
TO_WAIVER	-0.0066	-0.0037	-0.0257	0.0094	0.0140	0.0116	0.0116
PS_WAIVER	-0.0021	-0.0267	-0.0055	-0.0124	-0.0168	0.0142	0.0281
TR_WAIVER	-0.0095	-0.0949	-0.0111	-0.0019	0.0096	-0.0047	0.0160
REEN_WAIVER	-0.0023	0.0310	-0.0348	0.0145	0.0140	0.0114	0.0243
PA_WAIVER	-0.0169	0.2087	-0.0235	0.0370	0.0296	-0.0239	-0.0017

	NOT_CI~N	DERNAT	DERUS	USBORN	USNAT	MMO_WA~R	MO_WAI~R
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4							
MCD6							
MCD8							
MCD9							
xMCD							
xAPP_DATA							
OCC							
PLC							
ENL_PGM							
USNA							
NROTC							
xENT_PGM							
COMM_2008							
COMM_2009							
COMM_2010							
COMM_2011							
xCOMM_FY							
DEPENDENTS							
FEMALE							
MARRIED							
AGE							
xAGE							
PR_ENL							
WHITE							
BLACK							
HISPANIC							
UNK_RACE							
OTH_RACE							
NOT_CITIZEN	1.0000						
DERNAT	-0.0036	1.0000					
DERUS	-0.0107	-0.0080	1.0000				
USBORN	**-0.2809**	-0.2092	**-0.6271**	1.0000			
USNAT	-0.0114	-0.0085	-0.0255	**-0.6673**	1.0000		
MMO_WAIVER	-0.0039	-0.0029	-0.0087	0.0139	-0.0093	1.0000	
MO_WAIVER	0.0122	-0.0065	0.0092	-0.0124	0.0063	0.1460	1.0000
ONTO_WAIVER	0.0040	-0.0129	0.0052	0.0111	-0.0183	0.0251	0.0764
DRUG_WAIVER	-0.0115	-0.0055	0.0032	0.0168	-0.0202	0.0652	0.0981
DUI_WAIVER	0.0057	-0.0082	0.0135	0.0045	-0.0189	0.0317	0.0454
TO_WAIVER	-0.0131	0.0280	-0.0099	-0.0078	0.0175	0.0238	0.0396
PS_WAIVER	0.0391	-0.0031	0.0302	-0.0238	-0.0098	-0.0034	-0.0075
TR_WAIVER	-0.0094	-0.0139	0.0342	0.0007	-0.0244	-0.0039	0.0232
REEN_WAIVER	0.0359	-0.0033	0.0085	-0.0321	0.0242	-0.0036	0.0372
PA_WAIVER	-0.0018	0.0005	-0.0139	-0.0123	0.0321	0.0268	0.0246

	ONTO_W~R	DRUG_W~R	DUI_W~R	TO_W~R	PS_W~R	TR_W~R	REEN_W~R
GPA							
xGPA							
MORE_COLL							
COLLEGE							
LESS_COLL							
xCOLLEGE							
APTITUDE							
xAPTITUDE							
PFT							
xPFT							
REFERRALS							
PR_LEG_ACT							
MCD12							
MCD1							
MCD4							
MCD6							
MCD8							
MCD9							
xMCD							
xAPP_DATA							
OCC							
PLC							
ENL_PGM							
USNA							
NROTC							
xENT_PGM							
COMM_2008							
COMM_2009							
COMM_2010							
COMM_2011							
xCOMM_FY							
DEPENDENTS							
FEMALE							
MARRIED							
AGE							
xAGE							
PR_ENL							
WHITE							
BLACK							
HISPANIC							
UNK_RACE							
OTH_RACE							
NOT_CITIZEN							
DERNAT							
DERUS							
USBORN							
USNAT							
MMO_WAIVER							
MO_WAIVER							
ONTO_WAIVER	1.0000						
DRUG_WAIVER	0.1514	1.0000					
DUI_WAIVER	0.0606	0.1089	1.0000				
TO_WAIVER	0.0985	0.1032	0.0646	1.0000			
PS_WAIVER	0.0223	0.0041	-0.0094	-0.0112	1.0000		
TR_WAIVER	0.0704	0.0275	0.0234	0.0680	0.0375	1.0000	
REEN_WAIVER	0.0071	0.0000	0.0079	0.0185	-0.0038	0.0427	1.0000
PA_WAIVER	0.1076	0.1737	0.0675	0.0335	-0.0067	0.0159	0.0307

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